REPORT RESUMES

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# A STUDY TO DETERMINE SPECIFIC SOURCES OF RESISTANCE TO THE USE OF AUDIOVISUAL MATERIALS BY COLLEGE AND UNIVERSITY TEACHERS AND THE DEVELOPMENT OF PROCEDURES FOR OVERCOMING THE BARRIERS TO OPTIMUM USE.

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THE OBJECTIVES OF THIS STUDY WERE TO (1) DETERMINE THE EXTENT OF USE OF AUDIOVISUAL MATERIALS BY THE FACULTY, (2) IDENTIFY SPECIFIC SOURCES OF RESISTANCE TO THE USE OF AUDIOVISUAL MATERIALS, (3) STUDY AND ASSEMBLE INFORMATION ON AUDIOVISUAL FACILITIES AND PROCEDURES WHICH WOULD BE CONDUCIVE TO THE IMPROVEMENT OF COLLEGE TEACHING, AND (4) DEVELOP PROCEDURES FOR OVERCOMING BARRIERS TO OPTIMUM USE OF AUDIOVISUAL MATERIALS. THE PROCEDURES FOLLOWED SIX STEPS--(1) SELECTING EXPERIMENTAL GROUPS FROM THE UNIVERSITY'S FULL-TIME TEACHING STAFFS, (2) SELECTING A PILOT FACULTY FROM A PRIVATE 4-YEAR LIBERAL ARTS COLLEGE, (3) SELECTING A FULL TIME FACULTY FROM A 4-YEAR STATE-SUPPORTED INSTITUTION AS THE CONTROL GROUP, (4) ADMINISTERING A FACULTY OPINION QUESTIONNAIRE AND AN INSTRUCTIONAL MATERIALS SURVEY WHICH INCLUDED A LIKERT-TYPE OF ATTITUDE SCALE, (5) CONDUCTING PILOT COURSES SELECTED FROM HISTORY, PHILOSOPHY, ENGLISH, PHYSICS, AND LAW, AND (6) TEACHING AN EXPERIMENTAL GRAPHIC COMMUNICATION COURSE IN DENTISTRY VIA CLOSED-CIRCUIT TELEVISION. CONCLUSIONS INDICATED THAT (1) THERE WAS A TENDENCY TO ASSOCIATE THE NEED FOR AUDIOVISUAL MATERIALS WITH THE PROBLEMS OF LARGE CLASS INSTRUCTION, (2) THE WIDEST USE OF MATERIALS WAS AT THE UNDERGRADUATE LEVEL BY TEACHERS WITH THE HIGHEST RANK AND BROADEST TEACHING EXPERIENCE, (3) THE USE OF AUDIOVISUAL PROCEDURES PRODUCED A SIGNIFICANT POSITIVE CHANGE IN ATTITUDE IN THE EXPERIMENTAL GROUP, (4) USE OF AUDIOVISUAL MATERIALS COULD BE IMPROVED BY PROVIDING FOR PURCHASE OR RENTAL OF MATERIALS, (5) INTERNSHIPS FOR GRADUATE STUDENTS AND (6) SEMINARS WILL IMPROVE THE USE OF MEDIA. (HB)

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## AUDIO-VISUAL

## RESOURCES FOR COLLEGE TEACHING

LUX LIBERTAS

AV Media RESEARCH

AUDIO-VISUAL BUREAU
OF THE UNIVERSITY OF NORTH CAROLINA
AT CHAPEL HILL

U. S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
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FINAL REPORT

of

# A STUDY TO DETERMINE SPECIFIC SOURCES OF RESISTANCE TO THE USE OF AUDIO-VISUAL MATERIALS BY COLLEGE AND UNIVERSITY TEACHERS AND THE DEVELOPMENT OF PROCEDURES FOR OVERCOMING THE BARRIERS TO OPTIMUM USE.

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## INTRODUCTION

Today we live in a world characterized by rapid change which in turn imposes on educators the necessity for making continuing adjustments to keep abreast, if not ahead of changing conditions. The problem of keeping instruction abreast of new developments is certainly not one which any single group of educators must face alone. Margaret Mead, in an address entitled, "Changing Education for a Changing World," expressed this idea dramatically when she said, "We are now at a point where we must educate people in what nobody knew yesterday, and prepare people in our schools for what no one knows yet, but some people must know tomorrow." The fact that the problems of college and university teachers are becoming more specialized and complex makes it imperative for us to be aware of technological developments in all areas.

In a statement related to this problem, William B. Aycock, Chancellor of the University of North Carolina at Chapel Hill, said, "The growing complexity of education and the increasing enrollment of students inevitably lead to greater demands on the faculty and increased use of teaching supplies and materials. We must also use the tools of modern instructional technology to maximum advantage if we expect to win the race between education and chaos."

"The next fifteen years will force complete re-evaluation of the role of the faculty member and the teaching process in American colleges and universities. There is little likelihood that the nation's rate of producing college faculty will keep pace with the personnel needs of institutions of higher learning. Yet, no democracy can deny educational opportunity to those who want and need it and long retain its strength and vitality... ." a statement made in the Preface to the Southern Regional Education Board's College Teachers and College Teaching, 1957.

One rational approach to this complex problem is to increase the college teacher's grasp of the potential of technology in instruction. An understanding of the techniques essential to the application of educational media at the present college level is a critical need in order to meet the current problems of higher education. This crisis in higher education reflects not only a quantitative need, in order to meet the demands of increasing enrollments and inadequate instructional facilities, but it also reflects the need for the application of instructional technology to the communication demands of an ever-increasing range of complex subject matter in college courses. These applications are as essential to an understanding of the social sciences and the humanities as they are to mathematics, modern foreign languages, and the natural sciences. Audiovisual media research, during the past decade, has been largely oriented to teacher education, learning theory, and utilization at the primary, elementary, and secondary school levels. It seems apparent, therefore, that meeting the specialized instructional demands of the college teacher at this time is one of our basic problems. This study has directed its attention to the identification of barriers contributing to this problem in the hope that the use of audiovisual media by college teachers may help them to keep pace with the advances in instructional technology.

The identification of specific barriers to the optimum use of audiovisual media in education is the first step toward devising ways of overcoming each barrier. When it is possible to make an accurate diagnosis, perhaps a cure can be prescribed. Prior to this study our main source of knowledge about the resistance to use of audiovisual media by college and university teachers was a matter of expert opinion, supplemented by some surveys. Research must tell us more about how, when, and where to apply new instructional techniques and help teachers to form new attitudes toward changing established patterns of instruction. Some of the most important sources of resistance to audiovisual media and practical suggestions for removing them will be presented in the following chapters.

## PURPOSE AND DESIGN OF THE STUDY

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Purpose of the study. The study was an attempt to: (1) determine the extent to which audio-visual materials were being used by the faculty of the University of North Carolina at Chapel Hill; (2) identify specific sources of resistance to the use of audio-visual materials; (3) study and assemble information on audio-visual facilities and procedures most conducive to the improvement of college teaching; and (4) develop procedures for overcoming barriers to optimum use of audio-visual materials.

The project has national significance for higher education in view of the problems of increasing enrollment and demands on qualified college staffs, the apparent need to improve all graphic communication techniques at the college level in large and small class instruction, with and without television, and the need to remove some of the barriers to optimum use. It was the purpose of this study to direct its attention to these problems and not to the matter of general effectiveness of audio-visual materials.

The specific problems which this study attempted to analyze were:

1. To what extent were audio-visual materials currently being used by the faculty?

2. What were the specific sources of resistance to the use of audio-visual materials, and why did the resistance exist?

3. Could a positive change in attitude on the part of faculty members be effected by procedures in this study?

4. Could the techniques for utilizing audio-visual materials by college teachers be improved?

5. What audio-visual procedures could be developed into a long-range program for improving the communication skills of graduate instructors?

6. By what amount could the use of audio-visual materials be increased through:

   (a) Actual participation of selected members of the instructional staff in the evaluation and preparation of college level audio-visual materials for their pilot courses, with and without television (See Appendix G) with the aid of graduate assistants and audio-visual consultants?

   (b) Consultation services on the evaluation and preparation of audio-visual materials for the faculty at large?

The Chronology outlines in detail the various phases of the study, reporting results briefly as each phase of the study was completed. For purposes of identification, as the report is developed in the ensuing chapters, the following groups, techniques, and instruments are described:

(a) Experimental group--The full time teaching faculty of the Division of Academic Affairs of the University of North Carolina at Chapel Hill.

(b) Pilot-test group--The full time teaching faculty of a private four year liberal arts college with a student body of approximately one thousand. The pilot-test group was used to validate the design of the evaluative instrument. This group was geographically located approximately two hundred and twenty-five miles from the experimental group.

(c) Control group-- The full time teaching faculty of a four year state-supported institution of higher learning. This control group also involved faculty members who taught at the graduate and the undergraduate level. This group was geographically located approximately fifty miles away from the experimental group. Although the original research design did not call for a control group, it was felt that the impact of the stimuli used to attempt to effect a change in the attitude of the experimental group might be measured more accurately if control of some of the variables was possible.

(d) Evaluative instrument--This instrument consisted of the Faculty Opinion Questionnaire and Instructional Materials Survey which included a Likert type of attitude scale. This instrument and an Interview Checklist, for evaluation of the project's graduate assistants, are described in Appendix D.

(e) Pilot courses--Regularly scheduled courses of the senior faculty members selected from the departments of History, Philosophy, English, Physics, and the School of Law. The actual course titles are listed in Appendix B.

(f) Dental course--This course was taught as an experimental course in graphic communication via closed-circuit television and, for the purposes of the basic study, was not considered one of the five pilot courses. A report of this experiment is described in Appendix G.

The project was designed as a two and one-half year study.

# CHRONOLOGY

## PHASE I (Fall 1959)

Recruitment of personnel began in June, 1959, with the employment of an Associate Investigator, three laboratory assistants, and a secretary. An on-the-job training program, including formal instruction, was initiated for the laboratory assistants.

The initial survey instrument was completed in November and a pilot test was conducted at Davidson College. The results of the pilot test were subjected to statistical treatment which indicated that the instrument would meet the requirements of the problem. After consultation with the personnel of the Psychometric Laboratory and the Institute for Research in the Social Sciences a Likert type scale was constructed.[1]

Although the survey instrument appeared to be reliable and valid, an interview guide was constructed to use as a follow up to the questionnaire. Plans were made to give the "Faculty Opinion Questionnaire and Instructional Materials Survey" to the teaching faculty of specified departments and schools within the University, and the interview instrument to a sample of approximately ten per cent of the faculty if necessary. Both the interview instrument and the questionnaire were designed to be statistically analyzed on an electronic computer.

During this phase, no steps had been taken to encourage the faculty to use audiovisual materials.

## PHASE II (Spring 1960)

The majority of the personnel for the project, including graduate assistants and faculty members for the pilot courses, were appointed. The faculty members were appointed on a part-time basis after agreeing to participate in the project. They were compensated for the extra work load involved in the project. An informal training program for the faculty members and a formal training program for the graduate assistants were started during this period. An attitude scale was designed as a result of the pilot test at Davidson College. The Faculty Opinion Questionnaire and Instructional Materials Survey was distributed to the faculty on February 18, 1960, with a covering letter from the Dean on February 29, 1960.[2] The data gathered were programed in May and June for the UNIVAC Computer. Duke University was selected as a control group. However, due to unforeseen developments at Duke University it was not possible to carry out this part of the project there. The faculty of Woman's College of the University of North Carolina was selected as an alternate control group in September 1960.

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[1] Appendix D

[2] Appendix D

The activities planned for this phase of the study were designed to encourage the use of audiovisual materials by the faculty. The six pilot course teachers in law, history, philosophy, English, dentistry, and physics, who agreed to participate in the project, prepared their regularly scheduled courses for the fall semester. The project provided each teacher of a pilot course with a graduate assistant of his choice.

A workshop was initiated in which the faculty members and their graduate assistants planned their courses for the integration of audiovisual materials. Materials designed specifically for their courses were developed and included sound-on-film recordings of visiting philosophers, overlay transparencies for closed-circuit TV teaching in dentistry, slide sets for history, and tape recordings for English and philosophy. The workshop was planned for the first six weeks of summer school, but extended into the second six weeks of summer school in order for participants and staff to complete materials.

## PHASE III (Summer 1960)

A more complete analysis of the data collected from the Faculty Opinion Questionnaire and Instructional Materials Survey was made during this period. Significant chi squares indicated a high degree of correlation between faculty rank and a quantitative use of audiovisual aids, defined broadly to cover all the conventional audiovisual materials as well as television.

The same Faculty Questionnaire and Instructional Materials Survey was administered to the faculty of the Woman's College of the University of North Carolina in Greensboro, as a control group. More than seventy per cent (70%) of the faculty responded to the questionnaire.

The workshop was extended into the second summer session and the graduate assistants continued to work with their professors in developing and evaluating techniques and materials suitable for the pilot courses to be taught in the fall.

In each case the graduate assistant did the basic research on the content of materials under the supervision of the pilot course teacher. After the scope of the materials was approved, the graduate assistant actually participated in the preparation and/or evaluation of materials to be used in the pilot course with the help of an audiovisual laboratory technician under the direction of the project's Research Associate.

## PHASE IV (Fall 1960 - Spring 1961)

Each graduate assistant was given individual instruction by the director of the laboratory in production techniques, as well as the mechanics of equipment operation. During the fall semester, an interview type of questionnaire administered to the six graduate assistants in the fields of history, English, physics, philosophy, law, and dentistry, indicated that these graduate students had a comprehensive grasp of the sources of materials available in their respective fields, an understanding of audiovisual production and evaluation techniques, and a working knowledge of audiovisual equipment.

The results of the questionnaire were studied carefully and it was indicated that this direct in-service training method had resulted in a superior level of competence in every respect, substantiating observations during the workshop.

Five pilot courses in law, history, philosophy, English and physics were taught. A pilot course was also taught in the School of Dentistry during this period. This was a laboratory-demonstration type of course taught by closed-circuit television, originating from a studio.

A brochure entitled Audio-Visual Resources for College Teaching was distributed to the entire faculty. Senior faculty members who were teaching pilot courses were shown using audiovisual materials in their classes. This emphasized the fact that the use of audiovisual materials was not a new idea and that there was no loss of prestige by college teachers who use them. In each case the normal environment of the college classroom, with large groups of students, was stressed. The development of a graphic arts laboratory and the supporting role of other audiovisual services were portrayed in the brochure as an integral part of a faculty-oriented audiovisual center. Closed-circuit television was demonstrated as a working instructional tool instead of as a modern experiment.

The increase in requests for services by department heads and individual faculty members after the brochure was distributed was tangible evidence of a positive response to this stimulus.

On November 15, 1960, permission was granted to extend Title VII Grant No. 731052.00 from June 30, 1961, to July 1, 1962.

During the second semester the five pilot courses in law, history, philosophy, English and physics were continued. The members of the faculty who taught the pilot courses in the fall semester continued their pilot courses in the second semester of 1961, with the exception of the history professor, who was on leave at the beginning of the second semester 1961. Substituted for this course was an experimental class of two hundred-fifty (250) freshmen and sophomores taught by a member of the history department faculty. The history graduate student who served the summer workshop acted as assistant to the history professor who taught "A History of Modern Civilization" to this large class during the second semester.

The graduate student, trained in the use of audiovisual materials, and the faculty member worked as a team during the thirty (30) days' period preceding the second semester. The history teacher first outlined the periods, or political episodes he wanted to illustrate with 16mm motion picture films during the second semester, e.g., World War I, the Russian Revolution, 29-30's Depression, World War II, the United Nations, Problems of the Middle East, India, Japan and Democracy, South America, South Africa, and contemporary problems such as China under the Communists.

Since this course was a survey course covering a hundred years of western civilization, only a brief period of time could be spent on any one of these political episodes or historical events. Normally one lecture was spent on World War I, for example, but in this instance a thirty minute film setting up some of the primary episodes as well as major decisions affecting the outcome of the War was used. Numerous other films carefully edited from documentary news reel footage, photographed at the time the events occurred, were used. The competence of the graduate student was particularly important because of the need to screen out extraneous material and to select the best films to illustrate each area. The history teacher previewed all the films selected, making notes on important points to be emphasized prior to showing the motion picture in class. Supplementary readings were assigned which would help to expand the student's knowledge of the particular era illustrated by the film.

## PHASE IV - Part A

The Faculty Opinion Questionnaire was administered as a post test to the same respondents who returned it in the spring of 1960. Since many of the respondents who returned questionnaires in the spring of 1960 were on leave, or had changed positions, the overall sample was smaller the second time that the questionnaire was administered.

A questionnaire was also administered again in the spring of 1961 to the control group at Woman's College of the University of North Carolina in Greensboro. It was decided that the control group from the faculty of another institution of higher learning, in the same state, would add reliability to the study.

## PHASE IV - Part B

The closed-circuit television course, using graphics in the School of Dentistry was completed.

At the end of the semester the six graduate assistants who had participated in the research project were interviewed and checked by questionnaire regarding their knowledge of audiovisual materials and techniques. The results were compared with questionnaires from thirteen public school teachers who had taken an audiovisual methods course at the graduate level during the past two years.

A quarterly newsletter to the faculty was distributed during the spring semester. This illustrated newsletter provided information for the entire University faculty and staff on developments in radio, television, motion pictures, and related educational media for instruction. It also reported trends in the utilization of the new media at other institutions of higher learning.

Increased interest in the use of audiovisual materials was indicated by the faculty and requests for materials and services grew.

Another single system, sound-on-film recording was completed for the Philosophy Department entitled SYMPOSIUM NUMBER ONE "Self-Knowledge." This type of local production has captured the interest of a number of heads of academic departments and professional schools. Its potential as a specialized, college level, teaching tool was beginning to be recognized by the University faculty.

**PHASE V** (Spring 1961 - Summer 1962)

The appointments of the research associate and graduate assistants for the project were terminated, according to schedule, during the summer of 1961 prior to the initiation of this phase of the project.

Major emphasis was placed on procedures for overcoming the barriers to optimum use of audiovisual media, including closed-circuit television, during this phase.

Three major steps considered in implementing these procedures were:

(1) Dissemination of information to faculty, graduate assistants, student teachers and to other institutions of higher learning upon request.

(a) Implementation of this phase was based largely on the development of communication facilities such as illustrated newsletters, and a rear projection screen and display board in a central location on the campus. This last service was designed to demonstrate the use of audiovisual media for the communication of information to the faculty and student body on campus activities and instructional techniques. This project created so much interest that it was necessary to schedule programs several months in advance. A continuous 16mm motion picture projector was used at times, but the new Carousel projector which repeats (80) eighty 2" x 2" color slides continuously has been the most popular communication device. These slide series were programmed and synchronized with continuous magnetic tape recordings. For each program the scripts and narration have been produced by the sponsoring group.

(b) The facilities of the graphic arts laboratory were continued, and transparencies, displays, posters, and titles for 16mm motion picture films produced.

(c) A series of 16mm sound-on-film recordings of philosophy symposia with visiting international scholars were continued and financed by the Philosophy Department. The School of Dentistry has produced one 45 minute sound-on-film recording entitled "Utilization of Dental Assistants" and another one has been contracted for. The law film series has been discontinued temporarily for lack of funds.

(d) Evaluation and utilization of films, recordings, and other materials for National Science Foundation and NDEA Institutes have been continued and the implementation of plans for support of audiovisual materials in other areas of instruction are contingent on financial support from the administration.

(2) The second step to remove some of the physical barriers to instruction was concerned primarily with old classrooms, poorly darkened and acoustically hopeless without some specialized renovations. For example, one classroom in which a pilot course was taught was analyzed by an acoustical engineer who recommended some relatively simple acoustical treatment. Recommendations for improvement of physical facilities in old classrooms were made.

(3) Recommendations for continuing the training of graduate students in the use of audiovisual media were made pending administrative support or federal or foundation grants to support implementation.

PHASE VI (Fall 1962)

A request for extension of the terminal date of the project was granted and preparation of the final report was continued.

# PRETEST FINDINGS OF THE EXPERIMENTAL GROUP

This chapter is an analysis of the pretest findings of the experimental group. There were 365 respondents in this pretest group, but only 174 in the post-test. The data in this chapter are not directly comparable to the data in Chapter III because of the difference in the number of respondents. Detailed description of pretest and other procedures given in Appendix D.

Based upon the pretest responses of the experimental group, fourfold contingency tables were plotted. These tables were tested by the chi square statistic to determine whether the observed frequencies departed significantly from change expectancy. Chi-square comparisons of various factors such as attitude, faculty rank, teaching experience, and utilization were computed to determine whether these factors were associated significantly. Fifty-four chi squares were computed. Table 2-1 shows significant associations as determined by chi square.

Table 2-1 is a composite table of many small fourfold percentage tables, for example, the fourfold percentage table to show the association between rank and upper class use is:

| | Rank | |
|---|---|---|
| Use | Professorial | Non-Professorial |
| Above Mean Use | 42 | 30 |
| Below Mean Use | 58 | 70 |

TABLE 2-1. SIGNIFICANT ASSOCIATIONS AS DETERMINED BY CHI-SQUARE

| | Rank | Teaching Experience | Degree | Years since receiving degree | Attitude | Utilization | Familiarity | Deterrent |
|---|---|---|---|---|---|---|---|---|
| Use Lower | .05 | | | .02 | .05 | | | |
| Use Upper | .05 | .10 | | .02 | .10 | .01 | | |
| Use Graduate | | | | | .01 | | .10 | .10 |
| Use Composite | .10 | | | .05 | | .10 | .10 | |
| Deterrent | | .05 | | | .10 | | | |
| Familiarity | | | .10 | | | | | |
| Utilization | | | .10 | | | | | |
| Attitude | | | | | | | | |

Table 2-1 tends to show that teachers of professorial rank (assistant professor, associate professor, and professor) who teach junior and senior courses tended to use more audiovisual materials than those of non-professorial rank (instructor, teaching assistant, and lecturer) who teach junior and senior courses. Thus, 42 per cent of the teachers of professorial rank were relatively high users while only 30 per cent of non-professorial rank were high users.

Teachers of professorial rank who teach freshman and sophomore courses tend to use visual aids more than those of non-professorial rank who teach freshman and sophomore courses. Teachers of professorial rank who teach tend to use visual aids more than teachers of non-professorial rank who teach.

Those respondents with more teaching experience who taught upper class courses tended to use more visual aids than those with less experience.

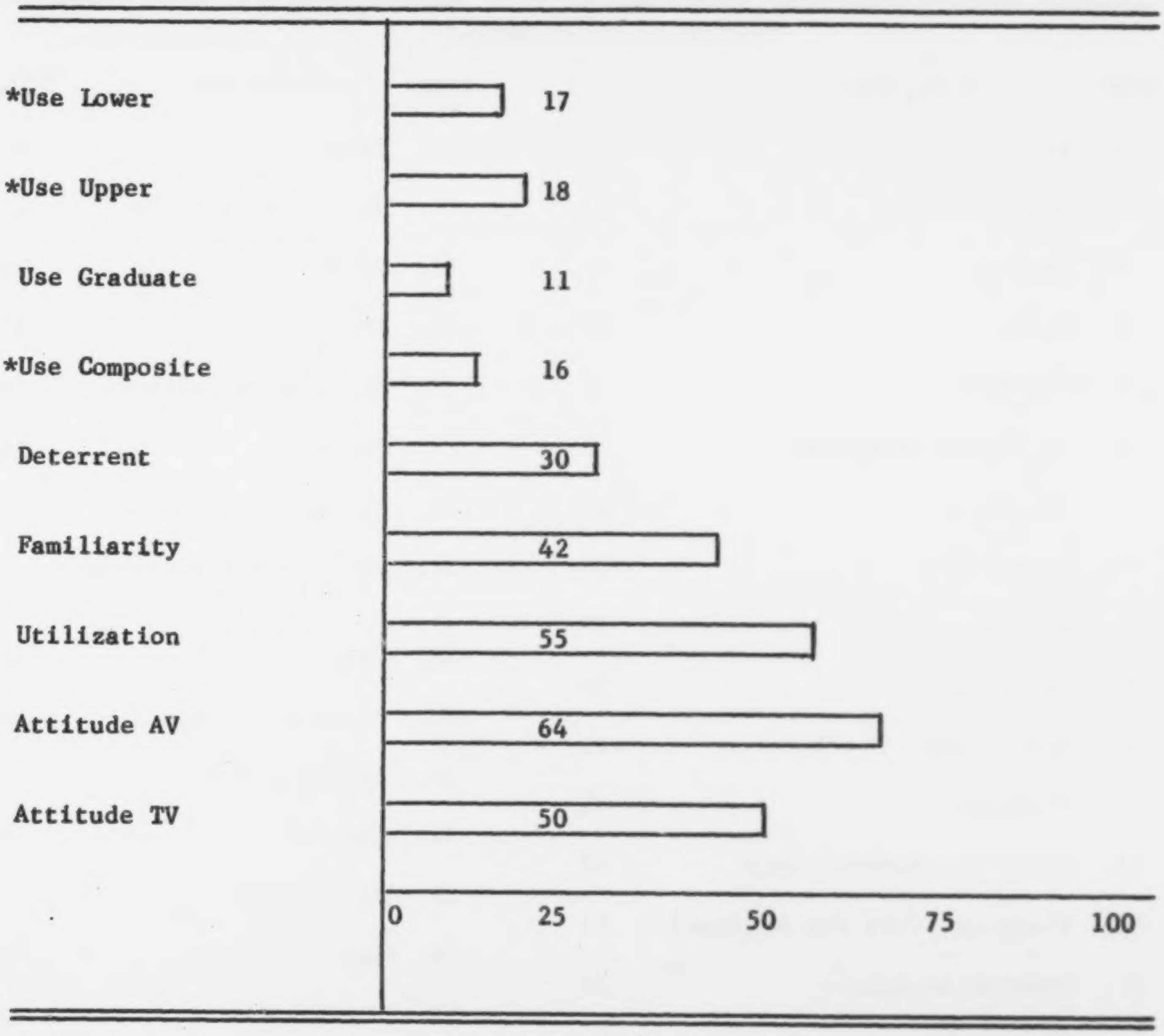
Those with more teaching experience tended to find less deterrents than those with less teaching experience.

Those with a more positive attitude toward visual aids tended to use them more than those with a less positive attitude.

Those with a more positive attitude toward visual aids tended to find more deterrents than those with a less positive attitude.

Those who taught graduate courses and used visual aids tended to find more deterrents to their use than those who taught graduate courses and did not use them.

TABLE 2-2. THE MEAN SCORE OF EXPERIMENTAL GROUP ON VARIOUS PARTS OF THE PRETEST QUESTIONNAIRE.



In this table the scores of the 365 respondents were totaled and then divided by 365 to get average or mean score.

*Lower = freshman and sophomore classes

Upper = junior and senior classes

Composite = all classes

TABLE 2-3. THE SCORES OBTAINED BY THE DEPARTMENTS OF THE EXPERIMENTAL GROUP ON THE PRETEST.

COMPOSITE - ALL LEVELS

| RANK | DEPARTMENT | SCORE | RANK | DEPARTMENT | SCORE |
|---|---|---|---|---|---|
| 1. | Air Science | 77 | 17. | Chemistry | 21 |
| 2. | Naval Science | 61 | 18. | Political Science | 21 |
| 3. | Zoology | 44 | 19. | RTVMP | 20 |
| 4. | Music | 37 | 20. | Math | 19 |
| 5. | *Physics | 36 | 21. | Physical Education | 19 |
| 6. | Geology & Geography | 35 | 22. | Art | 18 |
| 7. | Religion | 33 | 23. | Germanic Languages | 17 |
| 8. | Botany | 32 | 24. | Economics & Business Administration | 15 |
| 9. | *History | 29 | 25. | Journalism | 14 |
| 10. | Education | 25 | 26. | Library Science | 11 |
| 11. | Statistics | 25 | 27. | Dramatic Arts | 8 |
| 12. | Classics | 23 | 28. | English | 8 |
| 13. | Sociology-Anthropology | 23 | 29. | *Philosophy | 8 |
| 14. | Planning, City and Regional | 23 | 30. | *Law | 8 |
| 15. | Romance Languages | 23 | 31. | Social Work | 3 |
| 16. | Psychology | 22 | | | |

(*) Pilot Course Departments

Number of departments - 31
Mean for the University - 16

There were 100 points possible and the range was from a high of 77 to a low of 3.

The individual scores within a department were totaled and divided by the number of people in the department.

TABLE 2-4. THE DETERRENTS IN ORDER OF DIFFICULTY. THE DATA ARE THE PRETEST SCORES OF THE EXPERIMENTAL GROUP.

DETERRENTS

(In order of difficulty)

Deterrent ///// No Deterrent ☐

| | Deterrent | No Deterrent |
|---|---|---|
| 1. Limited departmental funds for purchase or rental of materials. | 80 | 20 |
| 2. Suitable materials not available for college use. | 57 | 43 |
| 3. Lack of information on college materials. | 43 | 57 |
| 4. Lack of technical assistance to aid in preparation of materials. | 42 | 58 |
| 5. There is not enough time available to locate good materials. | 40 | 60 |
| 6. Lack of adequate facilities for showing materials. | 38 | 62 |
| 7. Films, equipment or operators not available when needed. | 33 | 67 |

• There were three possible checks -- major deterrent, moderate and minor, or no deterrent. The moderate column was divided by two, and one-half was put into the major deterrent and one-half in the no deterrent.

DISCUSSION OF:

Tables 2-5, 2-6, 2-7, 2-8, and 2-9 were computed in this way:

The respondents were dichotomized -- the equal division method. This equal division method consisted of dividing the uncertain column by two and adding this to the "agree" and "strongly agree" or to the "disagree" or "strongly disagree." For example, suppose the replies were as follows:

| Strongly Agree | Agree | Uncertain | Disagree | Strongly Disagree |
|---|---|---|---|---|
| 20 | 20 | 50 | 5 | 5 |

By the equal division method the "strongly agree" and "agree" would be added to give 40 per cent "agree." The five per cent "disagree" and "strongly disagree" would be added to give 10 per cent "disagree." The "uncertain" would be divided by two to give 25 per cent to "agree" and 25 per cent to "disagree." This would make the total "agree" 65 per cent (20 + 20 + 25 = 65). The total "disagree" would now be 35 per cent (5 + 5 + 25 = 35).

Table 2-5 shows the pretest scores of the experimental group on general audiovisual questions. Both general and specific questions were included in the entire scale as it was assured that no one general audiovisual attitude existed. Instead there were specific attitudes toward specific audiovisual materials or devices. The specific questions are in the tables following Table 2-5.

## TABLE 2-5. GENERAL QUESTIONS

|  |  | Agree ▨ | Disagree ☐ |
|---|---|---|---|
| 3. | Slides, motion pictures and other audiovisual aids can be extremely effective in large classes of 75 or more students. | 74 | 26 |
| 4. | It is educationally sound to adapt films, slides and other audiovisual aids for widespread use in college teaching in order to meet the problem of increasing enrollment. | 57 | 43 |
| 6. | College teachers who want to use motion pictures, filmstrips, slides and other college level materials of this type should have the personnel, fiscal support, and technical facilities readily available. | 92 | 8 |
| 12. | Motion pictures, charts, graphs and other audiovisual materials may be fine for other teachers, but personally I have little use for them. | 64 | 36 |
| 13. | I believe audiovisual materials make a substantial contribution to the education of my students. | 50 | 50 |
| 19. | Most audiovisual materials that have come to my attention are unsuited for college use. | 43 | 57 |
| 24. | Slides, motion pictures, and other audiovisual aids can be extremely effective in small classes of less than 25 students. | 68 | 32 |
| 27. | If given sufficient personnel and financial assistance, I would like to supervise the preparation and evaluation of audiovisual materials for my classes. | 53 | 47 |

TABLE 2-6. SPECIFIC QUESTIONS DEALING WITH MOTION PICTURES.

| | Agree ▨ | Disagree ☐ |
|---|---|---|
| 1. Motion pictures can frequently aid me in my instruction. | 52 | 48 |
| 8. Properly handled, motion pictures can enable the college teacher to free himself of the burdensome task of conveying information and devote more time to individual students and research. | 28 | 72 |
| 11. It takes too much time to locate good films. | 49 | 51 |
| 26. I seldom can get a film when I need it. | 65 | 35 |

TABLE 2-7. SPECIFIC QUESTIONS DEALING WITH FILMSTRIPS AND SLIDES.

| | Agree ▨ | Disagree ☐ |
|---|---|---|
| 2. College teachers should be familiar with the filmstrips in their teaching area. | 52 | 48 |
| 10. Some of my colleagues have had excellent results in using slides. | 61 | 39 |
| 14. Slides take up too much class time, and do not leave time to cover the text material. | 61 | 39 |
| 15. Filmstrips are useful in good college teaching. | 68 | 32 |
| 16. I would like to produce slides for use in my class if the facilities and finances were readily available. | 54 | 46 |
| 20. Slides can be very helpful in most college subjects. | 58 | 32 |

TABLE 2-8. SPECIFIC QUESTIONS DEALING WITH TELEVISION.

Agree ▨ Disagree ☐

| | | Agree | Disagree |
|---|---|---|---|
| 23. | Teachers should receive royalties from filmed or taped television programs of which they are the author just as they now receive royalties from books. | 87 | 13 |
| 5. | I do not understand all the implications that television in college teaching has for me. | 64 | 36 |
| 7. | I would be willing to teach on television if I could teach from a television studio. | 47 | 53 |
| 9. | I would be willing to teach over open circuit (broadcast) television. | 50 | 50 |
| 18. | I would be willing to teach over closed-circuit television. | 52 | 48 |
| 25. | I would be willing to teach on television if it meant only the addition of inconspicious equipment to my classroom. | 52 | 48 |

TABLE 2-9. SPECIFIC QUESTIONS DEALING WITH CHARTS AND MAPS.

| | Agree ////// | Disagree |
|---|---|---|
| 17. When properly used, charts, maps and graphs save a great deal of teaching time. | //////////////////-79-////////////////// | 21 |
| 21. The effort in obtaining charts is certainly worth the values derived from their use. | ///////////////-65-/////////////// | 35 |
| Recordings | | |
| 22. The values to be gained from most recordings (tapes or disc) do not warrant their use in college teaching. | /////////////-56-///////////// | 44 |

TABLE 2-10. FACULTY'S UTILIZATION OF AUDIOVISUAL MATERIALS.

Good ▨ Poor ☐

| | Good ▨ | Poor ☐ |
|---|---|---|
| 1. Select and evaluate materials specifically related to the content of the course. | 61 | 39 |
| 2. Preview materials before use. | 64 | 36 |
| 3. Introduce the materials to the class. | 61 | 39 |
| 4. Provide proper facilities for projection and showing | 53 | 47 |
| 5. Discuss the materials with the class after or while using them. | 64 | 36 |
| 6. Have individual members of the class follow up any activities suggested by the materials or by a discussion of the materials. | 39 | 61 |

There were 3 possible checks - Always, Sometimes, Never.

The "sometimes" column was divided by two and the results added to the always or never columns.

# COMPARATIVE DIFFERENCES IN PRETEST AND POST-TEST SCORES OF EXPERIMENTAL GROUP.

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Introduction: This chapter is a comparison of the scores obtained by the faculty in the pretest and the scores obtained by the same respondents to the same test in the post-test. The data are based on 174 respondents and are not directly comparable to the data in Chapter II which are based on 365 respondents. Technical data on level of significance and other statistical tests may be found in Appendix D.

## A. EVALUATION OF THE FREQUENCY OF FACULTY USE

A scale to measure the frequency of use of audiovisual materials was constructed. (Appendix D). This scale was a measure of the number of times that a faculty member used audiovisual materials. A comparison was made between the use indicated in the pretest (Spring 1960) and the use shown in the post-test (Spring 1961).

The average pretest score obtained from the questionnaire on the faculty usage scale was 6.26 while the average post-test score was 6.75. This was an increase of .49 which was not significant at the five per cent level, but was significant at the ten per cent level (Appendix D). This seems to indicate that there was a trend toward greater use of audiovisual materials by the faculty.

Difficulties were encountered in comparing the pretest and post-test responses of the faculty members which caused a loss in respondents (Appendix D). The loss of matched respondents made it impossible to compare the frequency of use by the remainder of the university. (Since there was an increase in use by the general faculty who received no direct stimulus, such as the pilot course, it seems probable that the pilot departments, which had a direct stimulus, also increased in frequency of use.)

The control group suffered an even greater attrition rate with this particular scale as their faculty changed classes more rapidly than the experimental group. It was not feasible to compare the pretest and post-test scores due to this loss in the number of respondents. This difficulty did not occur for any of the other scales in the questionnaire (Appendix D).

## B. EVALUATION OF FACULTY DETERRENTS

A deterrent scale was used to determine what the physical barriers to the use of audiovisual materials were and the relative strength of the barriers (Appendix D).

For the two administrations of the questionnaire the percentage of respondents checking each of the deterrents listed is given in Table 4-1.

Table 4-1 shows the percentage of respondents in the experimental group (Appendix F) and their indications of the deterrents in both the pretest and post-test. No shifts are significant at the five per cent level of confidence, but many trends are evident and some of them in a negative direction. That is, some of the deterrents seem to have increased.

The over-all deterrents decreased, but some individual items such as item six in Table 4-1 seem to have increased. This seems to have resulted from many factors and an example might make the matter clear. For instance, a teacher who used no films would find few deterrents to their use. When his attitude toward audiovisual materials became more positive and he desired to use films he found deterrents. Money for films might not have been a deterrent when no films were used, but lack of money for films could become a deterrent when the teacher started to use films.

Question one in Figure 4-1 might also be explained in a similar manner. The teacher who used few materials was probably able to find good ones, but when he started to use more materials he found that there were not too many college-level materials available.

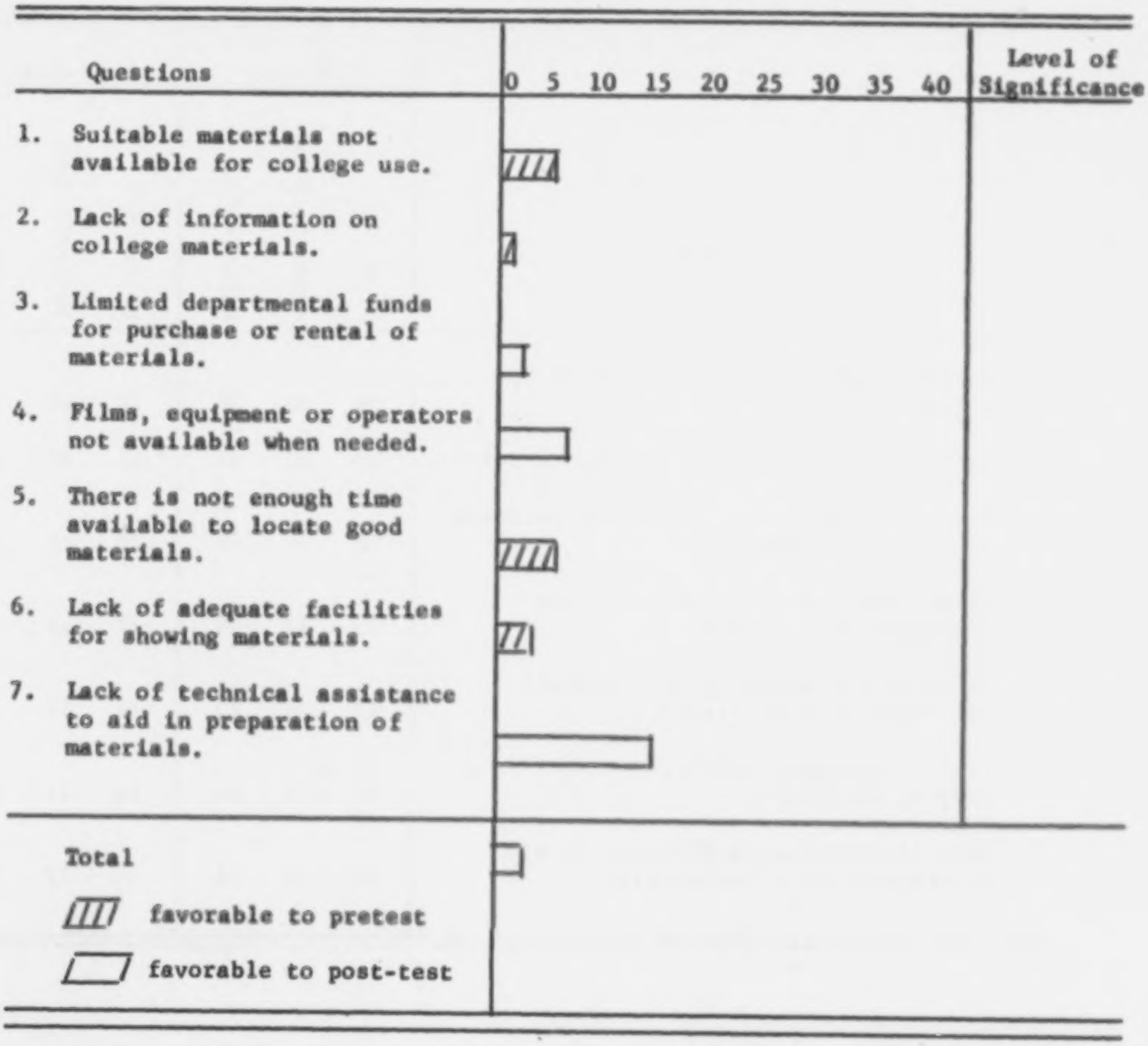
Question seven in Table 4-1 indicates a degree of success in giving the faculty technical assistance. Because of the dearth of materials in some fields local materials were produced. These included sets of slides, overhead transparencies, charts, felt board materials, sound-on-film recordings and many others.

There were no statistically significant changes shown in this chapter. Some trends, however, seemed evident. One of these trends was that teachers seemed to find more deterrents when they started to use more materials. The other general conclusion of this section was that the removal of physical barriers (renovating classrooms, supplying films, etc.) would be a very expensive undertaking, but some progress could be made by the provision of information.

TABLE 4-1. DETERRENTS AND PERCENTAGE OF RESPONDENTS INDICATING ITEMS WHICH WERE DETERRENTS IN PRETEST AND POST-TEST.

| ITEMS | Pretest | | | Post-Test | | |
|---|---|---|---|---|---|---|
| | Major Det. | Moderate Det. | Minor Det. | Major Det. | Moderate Det. | Minor Det. |
| 1. Suitable materials not available for college use. | 36 | 28 | 36 | 37 | 29 | 34 |
| 2. Lack of information on college materials. | 10 | 33 | 57 | 13 | 30 | 57 |
| 3. Limited departmental funds for purchase or rental of materials. | 18 | 34 | 48 | 20 | 28 | 52 |
| 4. Films, equipment or operators not available when needed. | 13 | 22 | 65 | 12 | 18 | 70 |
| 5. There is not enough time available to locate good materials. | 13 | 26 | 61 | 12 | 32 | 56 |
| 6. Lack of adequate facilities for showing materials. | 12 | 28 | 60 | 16 | 21 | 63 |
| 7. Lack of technical assistance to aid in preparation of materials. | 20 | 24 | 56 | 16 | 27 | 57 |

FIGURE 4-1. SUMMARY OF DIFFERENCE IN PRETEST AND POST-TEST SCORES--DETERRENT



## C. EVALUATION OF FACULTY ATTITUDE

The criterion used in assessing attitude was a 27-item Likert scale (Appendix D). Both specific and general questions were included in the scale. One assumption of the scale was that no one general attitude toward audiovisual materials existed. Instead, there were specific attitudes toward specific audiovisual devices or materials. The sum of these minor attitudes was taken as the respondent's general attitude. The specific questions allowed the detection of a shift in general attitude and also allowed the determination of changes in attitude toward particular audiovisual materials.

The experimental group's attitude toward audiovisual materials changed significantly. The increase was significant at the one per cent level of confidence (See Appendix F). This tends to show that the methods used in overcoming unfavorable attitudes towards the use of audiovisual materials were successful. The tables which follow break the scale down into segments by grouping questions dealing with similar materials or devices. The complete scale may be found in Appendix D.

Table 5-1 gives the percentage of responses in both the pretest and post-test on general audiovisual questions. An analysis of Table 5-1 indicates many shifts; for example, question three reveals a significant shift in the attitude of the faculty toward the use of audiovisual materials in large classes. Question four reveals that college teachers are more favorable toward the use of audiovisual materials when they are connected with the problem of school enrollment. The shift was not statistically significant at the five per cent level, but it was a trend in a favorable direction.

None of the other questions in Table 5-1 or Figure 5-1 approached statistical significance with the exception of question nineteen (Appendix D). The shift in that question was significant at the ten per cent level. Thus, it seemed that after the faculty were shown what was available in their particular fields they seemed to have found the materials worse than anticipated. *In the pretest some 40 per cent thought that most audiovisual* materials were unsuited for college use. After seeing what was available 62 per cent thought the materials unsuited for college use.

Figure 5-1 gives the summary of the differences in the pretest and post-test in graphic form. For example, the total difference between the pretest and post-test in question number twenty-seven was minus ten, as shown in the figure.

Table 5-2 shows the percentage of respondents and their attitudes toward motion picture questions in the pretest and post-test. Question one shows a favorable shift which was significant at the five per cent level of confidence. One interesting aspect of this table may be noticed in questions one, eleven, and twenty-six. The attitude toward question one increased favorably and significantly, but the attitude toward questions eleven and twenty-six dealing with the availability of films decreased. The decrease was not statistically significant, and no correlation test between these questions was computed. A faculty member who used a few films a year or who used no films had little difficulty with booking procedures and problems. However, when his desire to use films increased, and he wanted to use more films, he was confronted with booking and scheduling problems and films difficult to get. This is indicated by question 19 (Table 5-1). which dealt with the quality of films. When the faculty members saw or used no films, the quality of films was of no concern to him. When he started to use films, quality became important and judgment more critical.

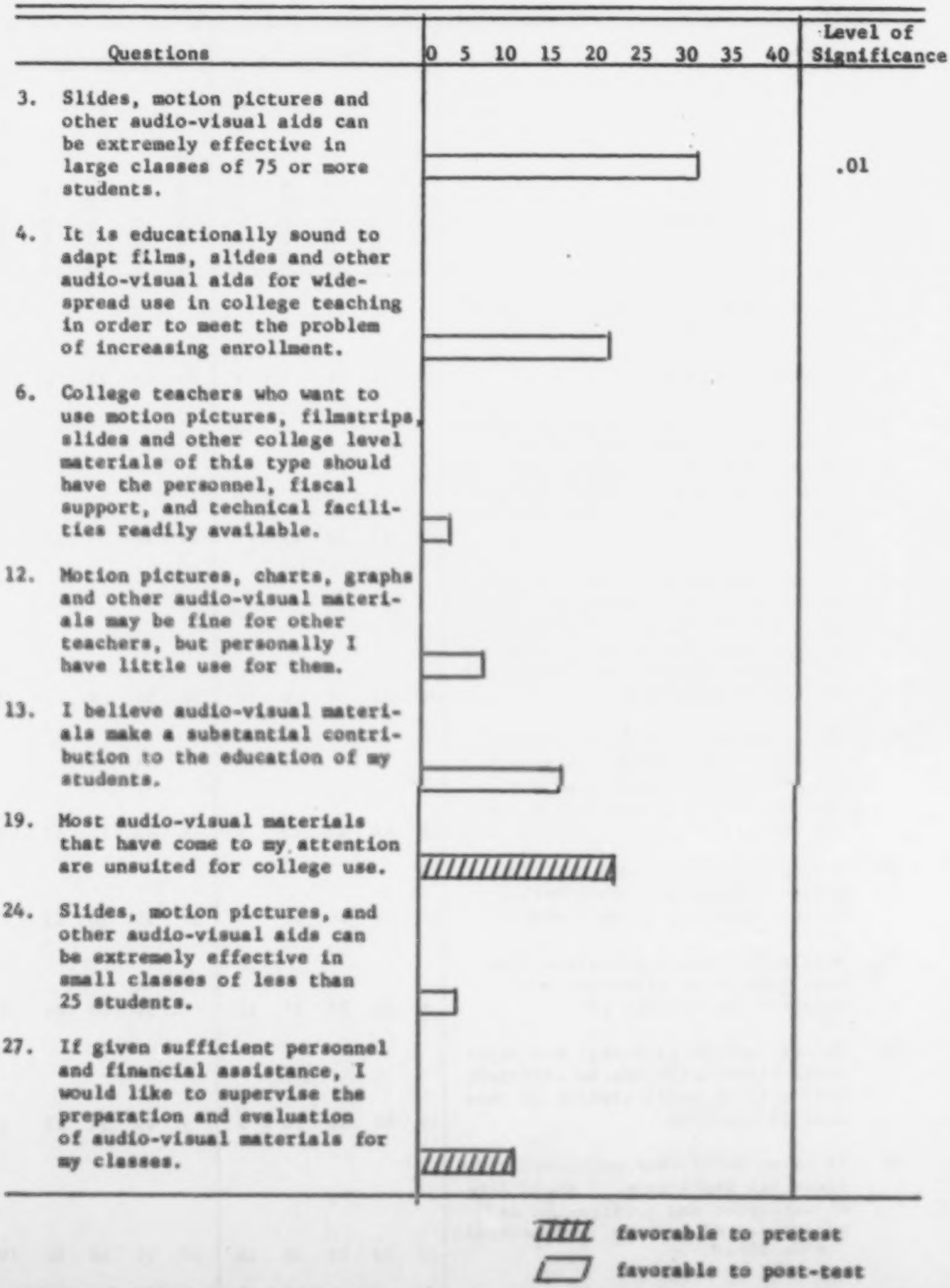
Figure 5-2 shows the differences between pretest and post-test and the significance of the differences.

Table 5-3 gives the percentage of responses on films and filmstrips. Question number 14 shows a favorable trend significant at the five per cent level of confidence. It seems to indicate that the faculty favor the use of slides. However, question 16 which asks the respondent if he would like to produce slides shows a trend significant at the five per cent level in a negative direction. This seems to indicate that the respondent favors the use of slides, but is unable to devote the time necessary to produce them.

TABLE 5-1. THE PERCENTAGE OF RESPONDENTS IN PRETEST AND POST-TEST TO GENERAL AUDIOVISUAL QUESTIONS

| | Pretest | | | | | Post-Test | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ITEMS | Strongly Agree | Agree | Uncertain | Disagree | Strongly Disagree | Strongly Agree | Agree | Uncertain | Disagree | Strongly Disagree |
| 3. Slides, motion pictures and other audio-visual aids can be extremely effective in large classes of 75 or more students. | 22 | 41 | 28 | 7 | 2 | 26 | 47 | 21 | 6 | 0 |
| 4. It is educationally sound to adapt films, slides and other audio-visual aids for widespread use in college teaching in order to meet the problem of increasing enrollment. | 13 | 32 | 30 | 13 | 12 | 14 | 32 | 33 | 14 | 7 |
| 6. College teachers who want to use motion pictures, filmstrips, slides and other college level materials of this type should have the personnel, fiscal support, and technical facilities readily available. | 36 | 53 | 7 | 4 | 0 | 36 | 55 | 8 | 1 | 0 |
| 12. Motion pictures, charts, graphs and other audio-visual materials may be fine for other teachers, but personally I have little use for them. | 18 | 42 | 17 | 18 | 5 | 18 | 43 | 17 | 17 | 5 |
| 13. I believe audio-visual materials make a substantial contribution to the education of my students. | 14 | 27 | 24 | 26 | 9 | 17 | 25 | 30 | 21 | 7 |
| 19,. Most audio-visual materials that have come to my attention are unsuited for college use. | 6 | 22 | 25 | 35 | 12 | 7 | 34 | 29 | 26 | 4 |
| 24. Slides, motion pictures, and other audio-visual aids can be extremely effective in small classes of less than 25 students. | 14 | 41 | 32 | 10 | 3 | 9 | 45 | 34 | 11 | 1 |
| 27. If given sufficient personnel and financial assistance, I would like to supervise the preparation and evaluation of audio-visual materials for my class. | 12 | 33 | 21 | 24 | 10 | 10 | 24 | 30 | 26 | 10 |

FIGURE 5-1. SUMMARY OF DIFFERENCE OF PRETEST AND POST-TEST SCORES--GENERAL AUDIO-VISUAL QUESTIONS



3. Slides, motion pictures and other audio-visual aids can be extremely effective in large classes of 75 or more students.

4. It is educationally sound to adapt films, slides and other audio-visual aids for widespread use in college teaching in order to meet the problem of increasing enrollment.

6. College teachers who want to use motion pictures, filmstrips, slides and other college level materials of this type should have the personnel, fiscal support, and technical facilities readily available.

12. Motion pictures, charts, graphs and other audio-visual materials may be fine for other teachers, but personally I have little use for them.

13. I believe audio-visual materials make a substantial contribution to the education of my students.

19. Most audio-visual materials that have come to my attention are unsuited for college use.

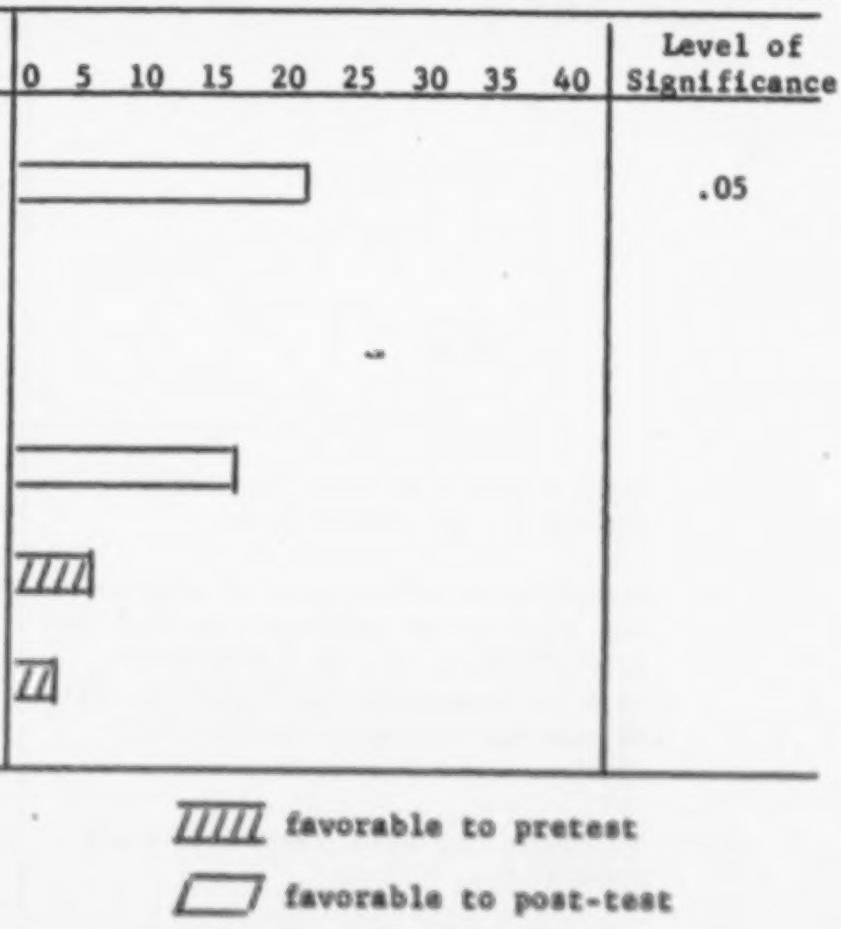
24. Slides, motion pictures, and other audio-visual aids can be extremely effective in small classes of less than 25 students.

27. If given sufficient personnel and financial assistance, I would like to supervise the preparation and evaluation of audio-visual materials for my classes.

TABLE 5-2. THE PERCENTAGE OF RESPONDENTS IN PRETEST AND POST-TEST TO MOTION PICTURES QUESTIONS.

| ITEMS | Pretest | | | | | Post-Test | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Strongly Agree | Agree | Uncertain | Disagree | Strongly Disagree | Strongly Agree | Agree | Uncertain | Disagree | Strongly Disagree |
| 1. Motion pictures can frequently aid me in my instruction. | 14 | 27 | 23 | 24 | 12 | 16 | 30 | 18 | 27 | 9 |
| 8. Properly handled, motion pictures can enable the college teacher to free himself of the burdensome task of conveying information and devote more time to individual students and research. | 5 | 10 | 30 | 33 | 22 | 5 | 17 | 24 | 33 | 21 |
| 11. It takes too much time to locate good films. | 8 | 28 | 30 | 30 | 4 | 5 | 28 | 35 | 26 | 6 |
| 26. I seldom can get a film when I need it. | 10 | 35 | 43 | 8 | 4 | 9 | 42 | 35 | 10 | 4 |

FIGURE 5-2. SUMMARY OF DIFFERENCE OF PRETEST AND POST-TEST SCORES--MOTION PICTURE QUESTIONS

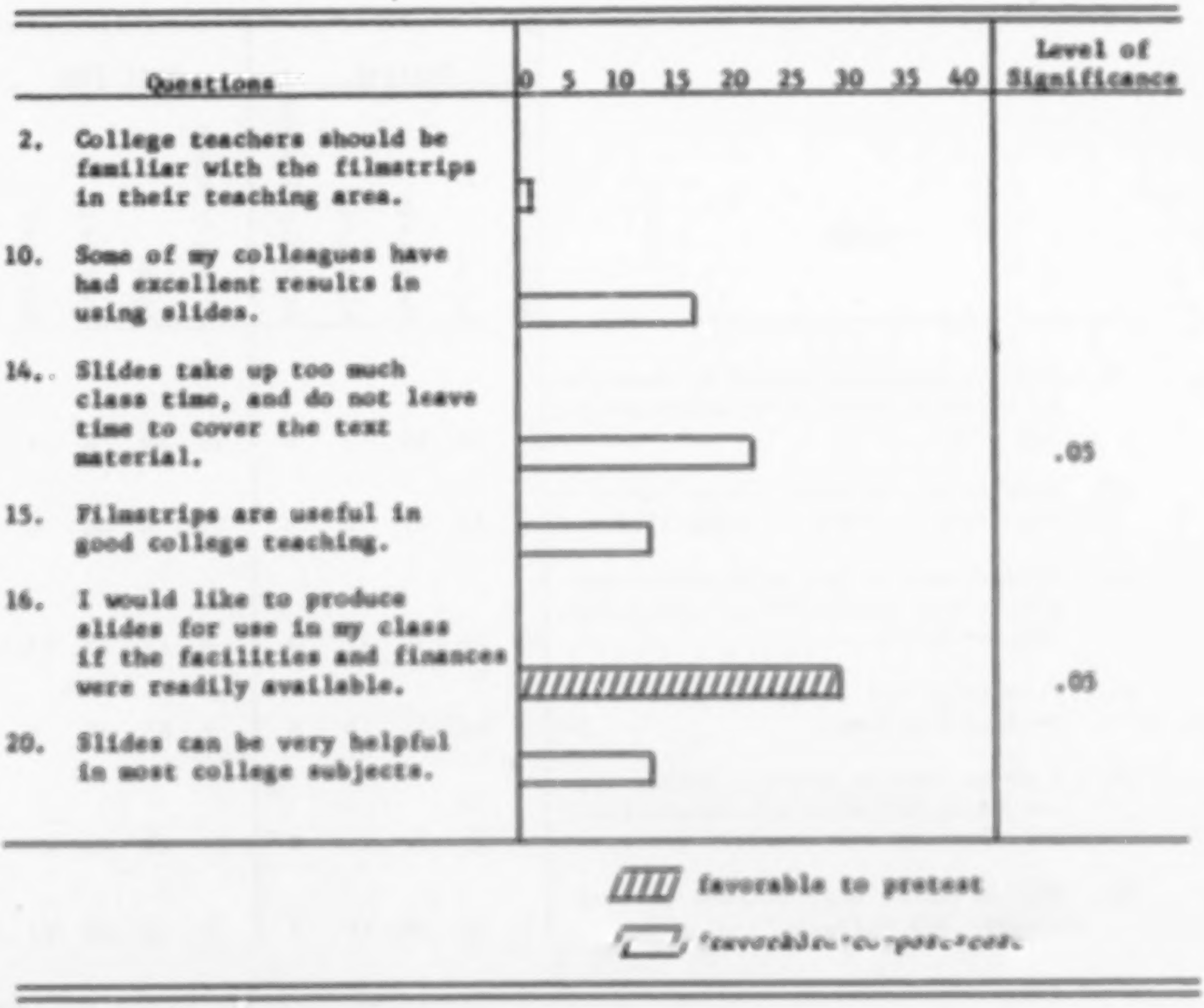


| Questions | Level of Significance |
|---|---|
| 1. Motion pictures can frequently aid me in my instruction. | .05 |
| 8. Properly handled, motion pictures can enable the college teacher to free himself of the burdensome task of conveying information and devote more time to individual students and research. | |
| 11. It takes too much time to locate good films. | |
| 26. I seldom can get a film when I need it. | |

TABLE 5-3. THE PERCENTAGE OF RESPONDENTS IN PRETEST AND POST-TEST TO FILMSTRIPS AND SLIDES QUESTIONS.

| ITEMS | Pretest | | | | | Post-Test | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Strongly Agree | Agree | Uncertain | Disagree | Strongly Disagree | Strongly Agree | Agree | Uncertain | Disagree | Strongly Disagre |
| 2. College teachers should be familiar with the filmstrips in their teaching area. | 21 | 64 | 10 | 5 | 0 | 19 | 69 | 8 | 4 | [illegible] |
| 10. Some of my colleagues have had excellent results in using slides. | 8 | 32 | 47 | 10 | 3 | 13 | 30 | 46 | 8 | [illegible] |
| 14. Slides take up too much class time, and do not leave time to cover the text material. | 10 | 34 | 36 | 17 | 3 | 2 | 13 | 33 | 41 | [illegible] |
| 15. Filmstrips are useful in good college teaching. | 9 | 41 | 36 | 10 | 4 | 7 | 45 | 37 | 9 | [illegible] |
| 16. I would like to produce slides for use in my class if the facilities and finances were readily available. | 16 | 31 | 24 | 24 | 6 | 11 | 30 | 25 | 27 | [illegible] |
| 20. Slides can be very helpful in most college subjects. | 7 | 34 | 39 | 15 | 3 | 7 | 33 | 41 | 12 | 5 |

FIGURE 5-3. SUMMARY OF DIFFERENCE OF PRETEST AND POST-TEST SCORES--FILMSTRIPS AND SLIDES QUESTIONS



| Questions | Level of Significance |
|---|---|
| 2. College teachers should be familiar with the filmstrips in their teaching area. | |
| 10. Some of my colleagues have had excellent results in using slides. | |
| 14. Slides take up too much class time, and do not leave time to cover the text material. | .05 |
| 15. Filmstrips are useful in good college teaching. | |
| 16. I would like to produce slides for use in my class if the facilities and finances were readily available. | .05 |
| 20. Slides can be very helpful in most college subjects. | |

Table 3-4 gives the results of questions dealing with television. In the pretest, question 23 shows that a majority of the faculty favored the payment of royalties. There was a significant shift from this position in the post-test. The shift was significant at the five per cent level of confidence. The greatest change took place between the "agree" and "uncertain" commmns with only a minor shift in the "disagree" column. No faculty member was in the "strongly disagree" column.

Question five in Table 3-4 indicates that the implications of television for college teachers seem to be understood better by the faculty. This trend was significant at the five per cent level of confidence.

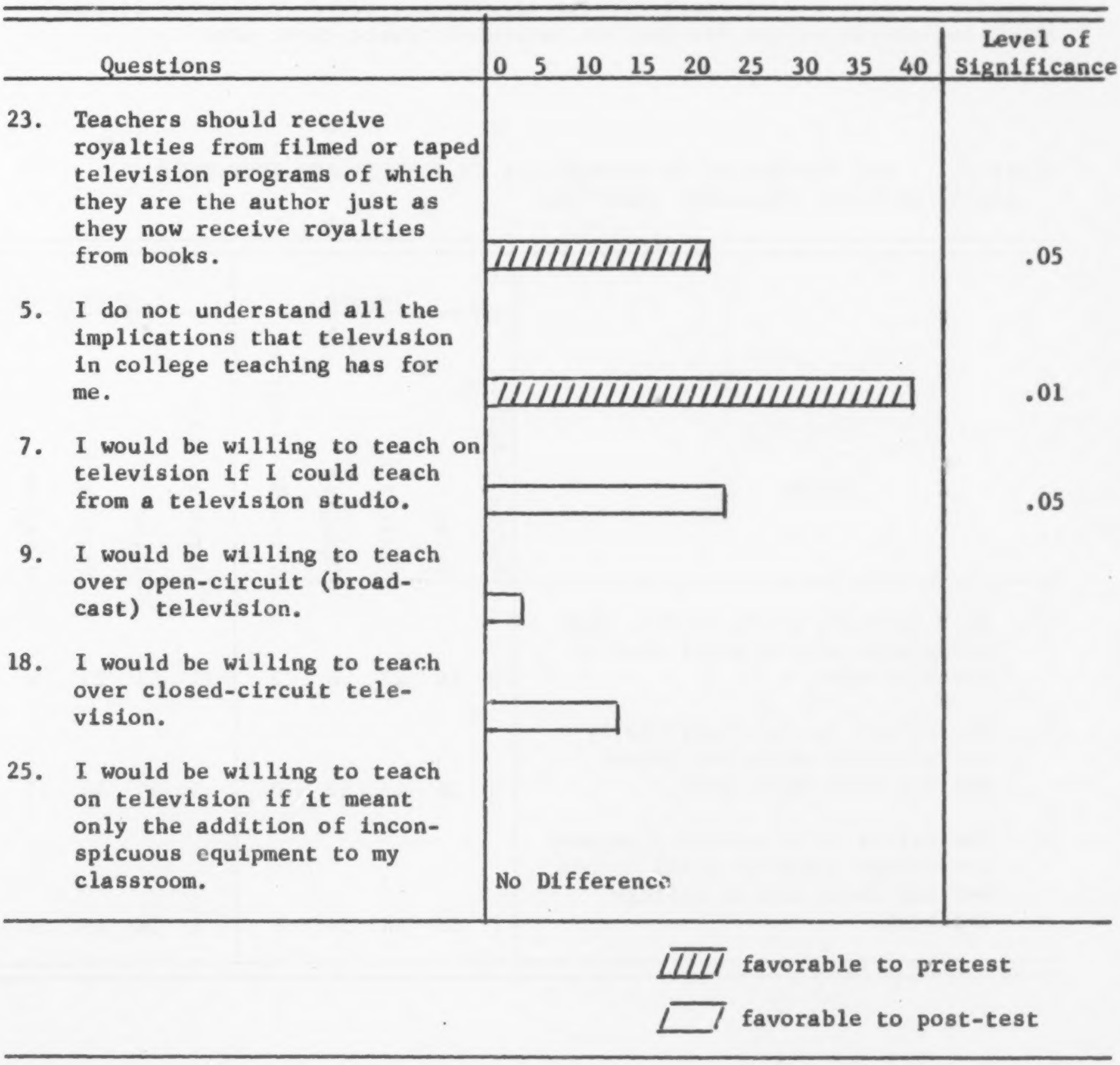
An effort was made in the construction of the questionnaire to differentiate between closed and open circuit television. The results of questions 9 and 18 show that television was television and that the faculty made little or no distinction between closed and open circuit types.

The principal conclusion is that television should serve the needs of the teacher, and not that the teacher should serve the needs of television.

TABLE 3-4. THE PERCENTAGE OF RESPONDENTS IN PRETEST AND POST-TEST TO TELEVISION QUESTIONS

| ITEMS | Pretest | | | | | Post-Test | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Strongly Agree | Agree | Uncertain | Disagree | Strongly Disagree | Strongly Agree | Agree | Uncertain | Disagree | Strongly Disagree |
| 23. Teachers should receive royalties from filmed or taped television programs of which they are the author just as they now receive royalties from books. | 26 | 52 | 20 | 2 | 0 | 25 | 41 | 29 | 5 | 0 |
| 5. I do not understand all the implications that television in college teaching has for me. | 14 | 41 | 24 | 14 | 7 | 9 | 36 | 26 | 20 | 9 |
| 7. I would be willing to teach on television if I could teach from a television studio. | 5 | 21 | 36 | 18 | 20 | 6 | 22 | 40 | 18 | 14 |
| 9. I would be willing to teach over open-circuit (broadcast) television. | 4 | 28 | 33 | 16 | 19 | 5 | 24 | 39 | 17 | 15 |
| 18. I would be willing to teach over closed-circuit television. | 3 | 29 | 35 | 15 | 18 | 5 | 26 | 38 | 17 | 14 |
| 25. I would be willing to teach on television if it meant only the addition of inconspicuous equipment to my classroom. | 3 | 18 | 38 | 29 | 12 | 2 | 18 | 40 | 29 | 11 |

FIGURE 5-4. SUMMARY OF DIFFERENCE IN PRETEST AND POST-TEST SCORES--TELEVISION QUESTIONS



23. Teachers should receive royalties from filmed or taped television programs of which they are the author just as they now receive royalties from books.

5. I do not understand all the implications that television in college teaching has for me.

7. I would be willing to teach on television if I could teach from a television studio.

9. I would be willing to teach over open-circuit (broadcast) television.

18. I would be willing to teach over closed-circuit television.

25. I would be willing to teach on television if it meant only the addition of inconspicuous equipment to my classroom.

Questions
0 5 10 15 20 25 30 35 40
Level of Significance
.05
.01
.05
No Difference
▨ favorable to pretest
▭ favorable to post-test

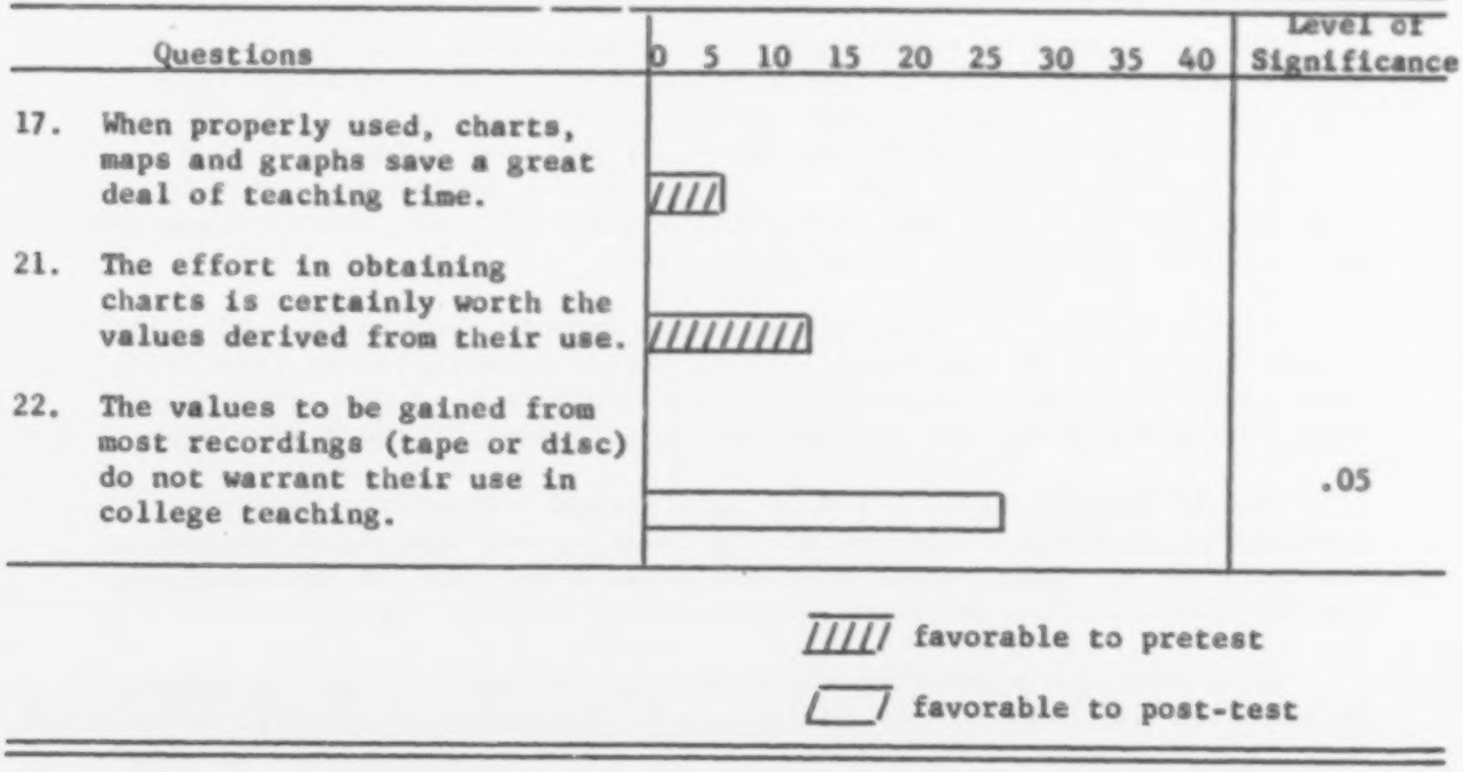
Table 5-5 indicates the respondents' answers to questions dealing with charts, graphs, maps, and recordings. These are standard materials which have been used for a long time and are widely accepted in college teaching. There are no statistically significant trends indicated although about two-thirds of the faculty are favorable toward their use.

TABLE 5-5. THE PERCENTAGE OF RESPONDENTS IN PRETEST AND POST-TEST TO CHARTS, MAPS AND RECORDING QUESTIONS.

| | Pretest | | | | | Post-Test | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| ITEMS | Strongly Agree | Agree | Uncertain | Disagree | Strongly Disagree | Strongly Agree | Agree | Uncertain | Disagree | Strongly Disagree |
| 17. When properly used, charts, maps and graphs save a great deal of teaching time. | 22 | 46 | 22 | 8 | 2 | 21 | 51 | 21 | 6 | 1 |
| 21. The effort in obtaining charts is certainly worth the values derived from their use. | 9 | 36 | 43 | 12 | 0 | 5 | 39 | 44 | 11 | 1 |
| 22. The values to be gained from most recordings (tape or disc) do not warrant their use in college teaching. | 7 | 25 | 48 | 14 | 6 | 1 | 14 | 49 | 25 | 11 |

Figure 5-5 shows the graphic presentation of the data. Question twenty-two has a favorable trend which is significant at the five per cent level of confidence. Recordings are gaining acceptance in many areas of instruction. The tape recorder is also increasing in use in the languages, literature, and speech areas.

FIGURE 5-5. SUMMARY OF DIFFERENCE OF PRETEST AND POST-TEST SCORES--CHARTS, MAPS, AND RECORDING QUESTIONS



## D. EVALUATION OF FACULTY UTILIZATION AND FAMILIARITY WITH AUDIOVISUAL MATERIALS

It was assumed that proper utilization consisted of a series of steps and that following these steps would result in proper utilization of audiovisual materials. Neglecting any of the steps would not result in improper utilization, but in a comparatively less efficient form of utilization. Because of this fact, utilization was not dichotomized. It was placed on a continuum ranging from poor to good. It was realized that a teacher who followed all of these steps might have utilized audiovisual materials poorly, and that one who followed none of the steps might have used them well.

The percentage of respondents who answered each item for both the pretest and the post-test is given in Table 6-1. Specifically, item five in Table 6-1 indicates that in the pretest 60 per cent usually discussed the materials with the class, 10 per cent seldom did, and 30 per cent had no discussion. In the post-test 64 per cent usually discussed the materials with the class while 7 per cent seldom discussed material and 29 per cent had no discussion.

Figure 6-1 is a summary of the difference in pretest and post-test scores and gives the statistical significance as measured by that test. Item number five in Figure 6-1 shows the difference in pretest and post-test scores and gives the statistical significance of the difference.

Figure 6-1 and Table 6-1 show some trends. Item five appears to indicate an increase in the number of teachers who discuss materials during or after class, while item one shows a decrease in the number of teachers who selected materials specifically for the class.

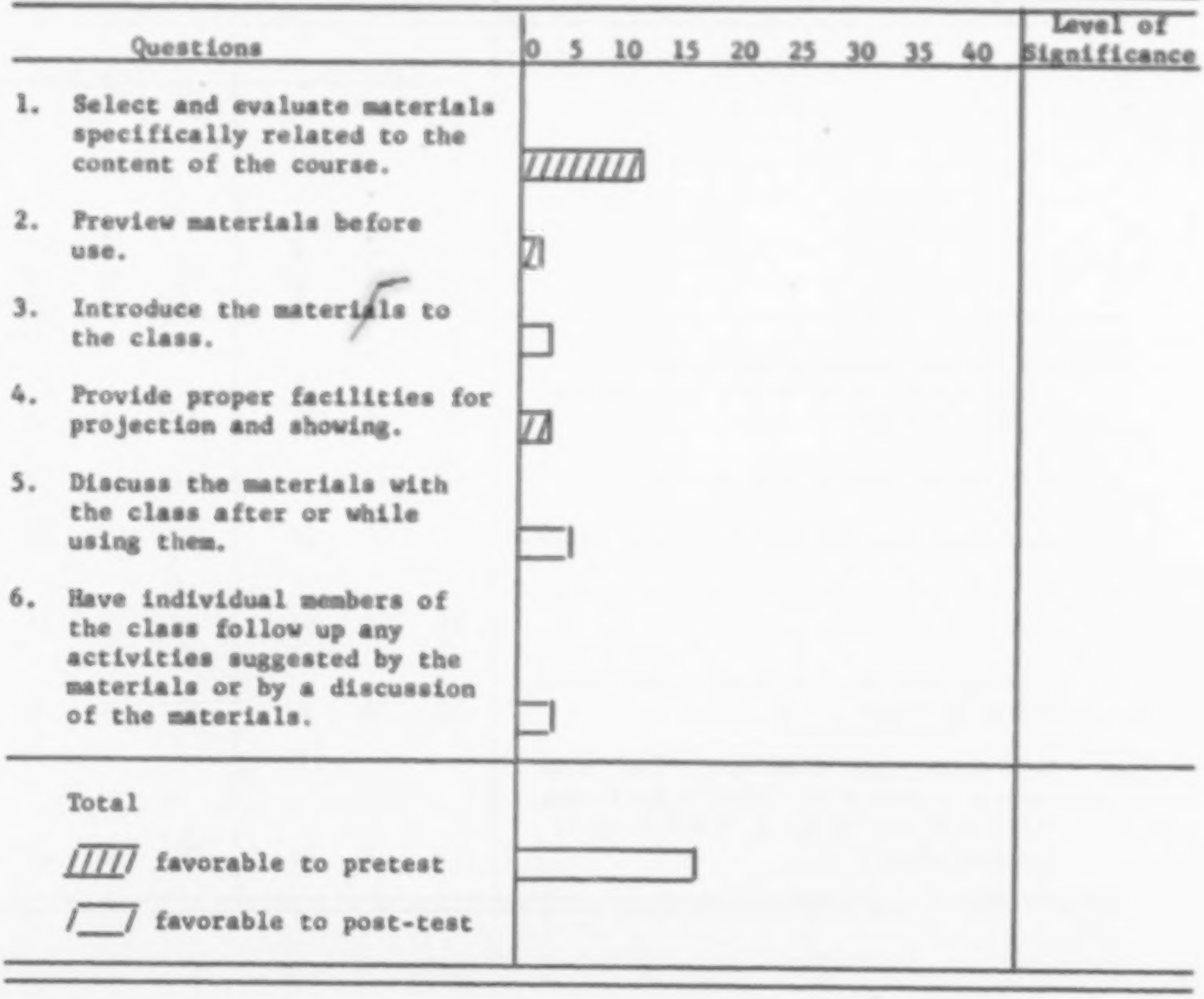
This response pointed up the general criterion used in the scale; it revealed that some of the criteria were intended for specific audiovisual materials such as a film, and not for all types of audiovisual materials. For example, a film might be introduced before it is shown, but not each of thirty transparencies which are usually explained when projected.

The same reasoning would apply to question two. That is, a teacher who normally used one or two films a year would preview it, but a teacher who used several films a month in addition to other material may no longer have the time to preview them. This was one of the reasons for the graduate assistants who did preview the films and other materials and then gave their findings to the teacher.

TABLE 6-1. THE PERCENTAGE OF RESPONDENTS AND UTILIZATION PATTERN IN PRETEST AND POST-TEST

| ITEMS | Pretest | | | Post-Test | | |
|---|---|---|---|---|---|---|
| | Usually | Seldom | Never | Usually | Seldom | Never |
| 1. Select and evaluate materials specifically related to the content of the course. | 59 | 14 | 27 | 53 | 18 | 29 |
| 2. Preview materials before use. | 61 | 11 | 28 | 61 | 12 | 27 |
| 3. Introduce the materials to the class. | 58 | 12 | 30 | 60 | 11 | 29 |
| 4. Provide proper facilities for projection and showing. | 50 | 15 | 35 | 49 | 16 | 35 |
| 5. Discuss the materials with the class after or while using them. | 60 | 10 | 30 | 64 | 7 | 29 |
| 6. Have individual members of the class follow up any activities suggested by the materials or by a discussion of the materials. | 20 | 33 | 47 | 24 | 29 | 47 |

FIGURE 6-1. SUMMARY OF DIFFERENCE IN PRETEST AND POST-TEST SCORES--UTILIZATION



1. Select and evaluate materials specifically related to the content of the course.
2. Preview materials before use.
3. Introduce the materials to the class.
4. Provide proper facilities for projection and showing.
5. Discuss the materials with the class after or while using them.
6. Have individual members of the class follow up any activities suggested by the materials or by a discussion of the materials.

TABLE 6-2. PERCENTAGE OF RESPONDENTS AND THEIR FAMILIARITY WITH AUDIOVISUAL MATERIALS IN PRETEST AND POST-TEST

| ITEM | Pretest | | | Post-Test | | |
|---|---|---|---|---|---|---|
| | Yes, quite familiar | Somewhat familiar | Not familiar | Yes, quite familiar | Somewhat familiar | Not familiar |
| Have you had occasion to become familiar with the commercially produced teaching materials in your field such as motion pictures, filmstrips, records, and slides? | 26 | 43 | 31 | 23 | 53 | 24 |

Table 6-2 shows the percentage of respondents who indicated in the pretest and post-test familiarity with the audiovisual materials in their field. The pretest showed that 26 per cent were "very familiar," 43 per cent "somewhat familiar," and 31 per cent "not familiar." The post-test indicated that after the stimulus, only 23 per cent considered themselves "very familiar," 53 per cent "somewhat familiar," and 24 per cent "not familiar." The respondents for the pretest and post-test were matched so that the same responses were analyzed. Analysis showed that familiarity increased, but not significantly.

Analysis of respondents' evaluations of their uses of audiovisual materials indicated that teachers became aware of a need which they did not know about previously. This awareness of better materials and a more effective use of these materials gave them new standards by which to measure their progress. The same measurement, used later when the respondents had achieved new standards, showed them to have regressed in use, when, based on actual usage, they had progressed.

# OBSERVATIONS

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## A. GENERAL

The previous sections of this report were descriptions of the findings and were based on analysis of data. This section is based on empirical knowledge since the complex nature of a university faculty precludes the use of standard measuring instruments to assess all the variables.

One general observation is that college teachers will use audiovisual materials if they are consistently supported with the fiscal and personnel resources that are essential to effective utilization. In any case, the teacher's needs should be considered individually and the materials should fit the individual's patterns of teaching.

College teachers do not readily accept the judgments of others, concerning materials in their subject-matter fields, without close scrutiny. Because of the care which these teachers exercise in judging materials, many audiovisual materials purported to be college level did not withstand very close inspection. The most common statement was that, "the materials would be fine for high school but were not advanced enough for college." The materials which received high ratings by the college teachers were used repeatedly in different classes.

Another difficulty encountered for some courses was in the difficulty of obtaining current materials. The major television networks produce some excellent programs which are pertinent to current affairs in several subject fields. These cannot be readily obtained, however, because of distribution problems which leave them dated by the time they are released for classroom use.

Programing the pretest data presented other problems. The pretest data for the experimental group were programed for an electronic computer. Programing for such a diverse questionnaire was extensive and complicated. It took a great deal of time to complete and test the program and finally to run the data. The results indicated that it was not practical to use computer facilities with small numbers of respondents unless the program was relatively simple.

After the first experience with the computer, the remaining data were computed on a printing calculator. This resulted in a considerable saving of time and money.

## B. THE TRAINING OF GRADUATE ASSISTANTS

The graduate students in the project were chosen by the pilot course teacher with the aid of the Project Director. They were selected from the same academic area as that of the pilot course teacher. These assistants were given some formal instruction during the summer workshop, but their main instruction came from working on actual projects for the teacher. They served as a liaison between the professor and the illustrator and supervised the preparation of materials.

For example, one of the projects of a professor was to give multiple illustrations of actors and their interpretations of parts of Shakespearean plays. Formerly, this had been done by bringing three records into class and after searching for the proper lines in one record, playing it and then searching through the other two records. Sometimes the interpretation of three actors would be done a line at a time. This could be a very frustrating situation if it was done in class with disc recordings. For the pilot course, the graduate assistant dubbed the various selections from the records onto a magnetic tape in order that the instructor would have the excerpts in proper sequence. The teacher indicated what he wanted done, and the graduate student did the necessary research and supervised the technical preparation.

The graduate assistant in dentistry was a third-year dental student. Dentistry, a highly technical field, presented many problems. For example, when the professor deals directly with a graphic artist, it is difficult to explain the dental procedures to the artist and requires a great deal of the teacher's time. In this case the professor would tell the dental student that he wanted a sequence illustration of a dental procedure. The dental student would draw the sequence in rough form and recheck with the professor. If it was satisfactory, the assistant would turn it over to the audiovisual laboratory and the final drawing and preparation of transparencies would be done. The assistant, on occasion, helped in the actual preparation of the transparencies so he would know the limitations and assets of that particular medium.

The graduate assistants helped the professor in the classroom, as well as in the preparation of materials. They observed teachers in action and worked closely with them. Prior to the study many professors realized that their classes lacked some material, but even money for materials was not enough; they needed a graduate assistant.

The graduate assistants served more than one professor and acted as a liaison between the department and the bureau. They served the pilot course teacher primarily but aided other teachers in the department.

The experience in this study indicated that the training of graduate assistants should be of an internship nature. Formal instruction is helpful as an introduction, but it should be only a brief overview of materials and media available. The assistant should then start to work with the professor and in the laboratory. When the assistant had a problem with a particular medium, it was resolved by conferences in the audiovisual laboratory.

The laboratory and its staff were always available to the teachers and to their assistants. This was done because many assistants had little experience in this field and needed guidance. The teaching and working functions were not separated in the laboratory; the materials made by assistants or under their supervision were not for training exercises, but were materials to be used by the teachers the next day or week. Standards of quality were quite high, and occasionally material had to be made again. Careful checking at each stage of production eliminated most of this.

One aspect of the laboratory was the use of students for graduate assistants and for laboratory assistants. Some were skilled in certain aspects of production while others were relatively unskilled. The training of these assistants was a continuous process, and they in turn trained and helped each other. From the beginning, the graduate assistants and laboratory assistants worked on actual projects under supervision and did good work.

The intern method of training of graduate assistants proved effective. This method avoids the assumption that there is a "best" method of teaching a particular subject. The intern method assumes that a subject field is composed of many courses and that the best person to show a graduate student how to teach a course is the professor who teaches the course. It makes no distinction between subject matter and method in that respect. The internship seems more acceptable to both graduate students and teachers on the college level and allows for individual differences.

The main points in favor of the intern program are: (1) the instruction for the interns is left with the department concerned; (2) the training is woven into the fabric of the degree program; and (3) much needed assistance is provided for college teachers.

## FINAL DISCUSSION, SUMMARY, AND CONCLUSIONS

Any summary of the findings in this study from which conclusions may be drawn about the attitude of a general faculty are not definitive by any standards which might be supported by statistical formulae. Many of the conclusions are the result of observation and experience and the most astute observer could not evaluate accurately the collective attitude of a college or university faculty, as a complex group, after such a limited period of organized observation. However, the statistical comparisons do reflect changes in the attitudes of individual members of the faculty toward the use of specific audiovisual materials and in some utilization characteristics which begin to emerge as instructional patterns.

In spite of the fact that one of the unique characteristics of this study was the natural behavioral setting of both the control group and the experimental group, the research was limited by the problems inherent in this situation involving relatively small groups of individuals over a brief period of time. The attrition rate between the pretest and the post-test was particularly high. Therefore, some of the statistical tests used in the study must be considered rather inconclusive. The more desirable situation would have been the availability of a larger group of post-test respondents in order to have a sufficient number of subjects with which to produce more significant comparisons between the pretest and the post-test responses.

Faculty members' manifestations of attitude toward audiovisual media and especially television agree with the findings of faculty attitude studies in other colleges and universities, thus suggesting that in general faculty attitudes' toward these new media are rather universal. However, in many cases where members of a faculty were asked to evaluate relative merits of television as an instructional medium when compared with the more familiar audiovisual materials, the choice was frequently weighted in favor of the latter. The following statement is quoted from the Chancellor's (ad hoc) Committee on Closed-Circuit Television in the Division of Academic Affairs, "Among the faculty, the Committee found no widespread enthusiasm for closed-circuit television as a medium of instruction. On the other hand, it found little, if any, active opposition to televised instruction, especially if such teaching is restricted for a time to a few controlled experiments. There are a small number of faculty members with a keen interest in seeing closed-circuit television become one of the teaching media employed in the University. It might be added that several faculty members expressed interest in enlarged facilities and improved budgetary arrangements for audio-visual aids."

In this regard, the closed-circuit television experiment conducted in cooperation with the School of Dentistry as an adjunct to the pilot course experiment, and reported in this study (Appendix G), was acclaimed by students and faculty for its use as a visual aid to instruction reinforced by the graphic presentation of material on transparencies with the overhead projector.

Generally, there was a tendency to associate the need for audiovisual materials with the problems of large class instruction as a result of increased enrollment. Ninety-two per cent of the respondents were adamant in their statements regarding the need to have the personnel, fiscal support, and technical facilities for the use of those audiovisual materials readily available. Specific problems identified in this study are briefly described in the following paragraphs with some recommendations for removing the major deterrents to the use of audiovisual media, as outlined by the faculty.

(a) Extent of use was indicated in several areas of the study, but quantitatively, the widest use of audiovisual materials was at the undergraduate level by the teachers with the highest rank and broadest teaching experience.

(b) The specific sources of resistance which were identified, in order of difficulty, were (1) limited departmental funds for purchase or rental of materials, 80%; (2) suitable materials not available for college use, 43%; (3) lack of information on college materials, 43%; (4) lack of technical assistance to aid in preparation of materials, 42%; (5) there is not enough time available to locate good materials, 40%; (6) lack of adequate facilities for showing materials, 38%; (7) films, equipment or operators not available when needed, 33%.

(c) The effect of audiovisual procedures used in the study reflected a significant positive change in attitude, as indicated in the post-test given the experimental group. Some of the procedures developed for pilot course teachers contributed to a definite change in attitude on the part of members of that department, as indicated by the continuation of such techniques as sound-on-film recording for the Department of Philosophy and the School of Dentistry. The over-all improvement of instructional facilities and the use of audiovisual materials has increased appreciably throughout the campus as indicated by the use of materials and equipment circulated through the Audio-Visual Bureau; this trend is also reflected in the design of instructional facilities for new buildings as well as in the renovation of old classrooms and lecture halls.

(d) Techniques for utilizing audiovisual materials could be improved by removing the major deterrent expressed by 80% of the respondents, i.e., limited departmental funds for purchase or rental of materials.

(e) It is recommended that internships be established for graduate students prior to their teaching assignments and that the orientation to instruction in their academic areas should be supplemented by seminars in the use of audiovisual materials on a long range basis. These internships should be funded through regular channels and the responsibilities should be outlined as a prerequisite to qualification for teaching assignments.

In order to remove the major deterrents to the use of audiovisual materials as specified by the faculty in this study, the following recommendations for implementation of a long range program are supported by and based on evidence presented in detail in the various phases of the report. Administrative implementation of such a program could be accomplished by the establishment of a fund for the purpose of procuring projection equipment, 16mm educational films, and audiovisual services requested by the faculty and (1) this fund should be administered by the Dean of the Faculty; (2) any request by a faculty member for audiovisual materials and services for classroom instruction should be honored by the Bureau of Audio-Visual Education without charge; (3) the Bureau should be reimbursed for these services from the fund established for this purpose, except for specialized 16mm educational films which would be matched by the requesting department on a 50-50 basis; (4) the fund should be established at a rate of $1.50 per student (including the total student body, graduate and undergraduate) and the fund should be projected at this ratio as the faculty and student body grow; (5) the educational films and materials purchased from this fund should be made available for use by other institutions of higher learning and state agencies in North Carolina on a rental basis when not required for use by the University of North Carolina faculty; (6) and a permanent faculty committee should be established with the Dean of the Faculty as chairman in order to plan the instructional facilities of new and renovated buildings within the context of instructional needs and the expanding student body.

During the operation of this study and since its termination, the facilities and staff of the Audio-Visual Bureau have been provided for the regular members of the University faculty who have been teaching secondary school teachers in National Science Foundation and National Defense Education Act institutes. These institutes in math science and modern languages have made excellent use of 16mm educational films and other audiovisual materials on limited budgets for the support of these educational media.

A constant re-evaluation of the effectiveness of materials and techniques using accepted research procedures is necessary in order to keep abreast of advances in modern instructional technology. From this study, it seems apparent that dissemination of information on audiovisual media for the specialized instructional needs of the college teacher, and that further research on and development of techniques adaptable to the problems of college teaching are critical needs at this time. There must be a continued emphasis on the use of these media by college teachers if we expect future teachers at every level to achieve their maximum instructional effectiveness.

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Numerous sources of films, filmstrips, records, and tapes were searched for suitable materials for the participating college teachers. University catalogs of audiovisual materials, commercial lists, and correspondence were all used. Dissertation Abstracts, Library of Congress Subject Catalog, Bibliographic Index, Education Index, as well as the audiovisual reference sources are examples of general sources checked for lists of materials suitable for the pilot courses and others. Professional journals and newsletters were also made available.

# APPENDIX A

## THE SUMMER WORKSHOP

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The summer workshop was organized to give the participating faculty members time to prepare their work prior to teaching the pilot courses in the fall. The teachers and assistants in collaboration with the Audio-Visual Bureau planned their pilot courses. They constructed course outlines and indicated which films, slides or other visual materials they would like throughout the course. The graduate assistants prepared lists of films in their fields and selected the appropriate films or other audiovisual materials. These were ordered and previewed by the graduate assistants who evaluated the materials. Those which received favorable ratings were then booked for the proper time in the fall and spring semesters.

If suitable materials were not available, they were produced by the audiovisual laboratory. The teacher would indicate his needs to the graduate assistant, who would do the necessary research on the problem. The assistant would prepare a plan for production of the materials with the aid of the audiovisual staff, and the materials would be produced by the laboratory assistants.

The workshop was originally scheduled for six weeks, but it was extended for a second six weeks' period. Materials for the courses were not all completed during the summer. The courses were to be revised as necessary to meet the teachers' and classes' needs, and new materials were to be added as the courses were taught. Pilot course teachers were reimbursed for their services at the regular summer-session salary scale and the graduate students were paid for the semester at the rate specified for graduate teaching fellowships.

The Laboratory of the Bureau of Audio-Visual Education was established in September of 1959 for the specific purpose of conducting research and the more general purpose of acting as a service agency for the university. The laboratory met a real need in the area of local production, and many faculty members have used its production and counseling services. It has also been helpful in the training of graduate students.

The research function of the laboratory explored the existing materials and developed specialized techniques for specific situations, such as 16mm sound-on-film recordings. These 16mm motion pictures made with a single-system sound camera were tailored to meet the needs of individual faculty members for teaching films which fitted specialized concepts in a variety of courses. Examples of these techniques are given in Appendix B.

The scope of the laboratory's services went far beyond service to the pilot course teachers and their graduate assistance. Many and varied services were rendered to all faculty members who requested assistance.

## INSTRUCTIONAL MATERIALS PREPARED BY AUDIO-VISUAL WORKSHOP STAFF

### DEPARTMENT OF PHILOSOPHY:

(3) 16mm Motion Picture Films: single-system sound, black and white
45 minute Philosophy Symposium

(6) Magnetic Tape Recordings: Philosophy-Psychiatry Symposium

### SCHOOL OF DENTISTRY:

(75) Transparent Diazo Overlays of various dental techniques for a closed-circuit TV course in Endodontics.

(1) 16mm Motion Picture Film: single-system sound, black and white
45 minute sequence, EFFECTIVE UTILIZATION OF DENTAL ASSISTANTS.

### SCHOOL OF LAW:

(1) 16mm Motion Picture Film: single-system sound, black and white 40 minute sequence, AUTOMOBILE ACCIDENT--INITIAL INTERVIEW WITH CLIENT, first film of legal education series.

### DEPARTMENT OF PHYSICS:

(4) 16mm Motion Picture Films: single-system sound, black and white

EQUILIBRIUM - Laboratory Experiment
ELECTRICAL CIRCUITS - Laboratory Experiment
ERROR IN PHYSICAL MEASUREMENTS - Laboratory Experiment
PALMATIER, RESEARCH FACILITIES, DEPARTMENT OF PHYSICS

(50) Overlays to illustrate various Physics Concepts.

### DEPARTMENT OF ENGLISH:

(20) Black and white slides on Shakespeare
(80) Black and white slides on Shakespeare
(2 ) Colored slides on Shakespeare

### DEPARTMENT OF HISTORY:

(12) Slides on reapportionment in N. C.
(87) Black and white slides on colonial architecture
(41) Slides on State and Regional History

### GENERAL FACULTY AND OTHER DEPARTMENTS

| Materials Produced | Department |
|---|---|
| Oedipus Rex (16mm films) | Dramatic Arts |
| Money Cycle Overlay | Business School |
| Sign on AV Media | Dental School |
| Cover for Pamphlet | Inst. for Research in Social Science |
| Chart of Exports and Imports | Business School |

# APPENDIX B

## EXAMPLES OF PILOT COURSE TEACHERS' USE OF AUDIOVISUAL MATERIALS

One of the problems dealt with in this study was the development of techniques for improving the utilization of audiovisual materials by college teachers. This section is based on experience rather than statistical data. It is difficult to involve a large number of college teachers in a workshop or pilot course, and because of this, statistical comparisons are not feasible. Large numbers of faculty members did participate in the study by responding to the questionnaire, but there was no extended contact as was the case with the pilot course teachers.

The improvement of utilization of audiovisual materials by faculty members followed two courses. The final course of action was directed at the pilot course teachers to encourage them to use materials. The second action was directed at the general faculty, but also included the six pilot course teachers.

The pilot course teachers were selected by personal interviews in which such factors as interest in audiovisual materials and a demonstration of interest in instructional problems prior to the project were the governing factors.

The teachers received individual attention. There were no group conferences for the summer workshop or pilot courses. Each pilot course teacher's instructional problem was treated as an individual project. Examples demonstrating the involvement of the pilot course teachers and the relationship of the graduate assistant as a member of the team follow:

### DEPARTMENT OF ENGLISH

One of the pilot course teachers was a professor of English whose special field was Shakespeare. He had two large sections of over 50 students each. He wanted to get a good collection of records to play for his class. He also wanted films showing well-known Shakespearean actors, and filmstrips showing local productions.

The first step involved an inventory of all suitable college-level audiovisual materials on Shakespeare. Standard audiovisual sources as well as the scholarly journals, e.g., *Shakespeare Quarterly*, *Shakespeare Jahrbuch*, etc., were searched.

The materials were ordered for preview and evaluated by the graduate assistant in conjunction with the teacher. After evaluation the records and filmstrips were purchased and the films were rented. This collection gave the faculty member a wide range of audiovisual materials on Shakespeare and his period.

The next step was to select the materials to be used for a particular class. Many records or selections from records were dubbed on magnetic tape so that they could be played in sequence. For example, two actors portraying a particular scene from Romeo and Juliet could be compared. Passages were selected from various recordings by the teacher, and his graduate assistant prepared the taped sequence with assistance from the audiovisual laboratory staff. The tapes were also used later by the students for extra class listening and study. Usually, the entire class viewed a motion picture, but occasionally these films were used by small groups of students.

If commercial materials were not available, local ones were produced. The English professor had a good collection of pictures clipped from magazines and newspapers over a thirty-year period. These were photographed to be made into 35mm slides. The pictures were then made available to the entire class by this simple process. The slides were loaded into an automatic projector which the teacher could control from the front of the room.

The graduate assistant participated in all aspects of the location and preparation of materials, as well as in assisting the teacher in the classroom with materials and equipment.

## DEPARTMENT OF PHILOSOPHY

Under the direction of the Chairman of the Department of Philosophy experiments with single-system sound photographic recordings on 16mm motion picture film were made in order to produce a philosophy symposia series. The first experimental symposium was conducted during the visit of a University of Leeds philosopher and centered around the theme of his latest book. Participants in the unrehearsed discussion included the visiting philosopher, the Chairman of the University's Department of Philosophy and one member of the Philosophy Department staff. The production was shot with an Auricon Camera in three 15 minute parts as one continuous 45 minute sequence with title leader prepared in the Audio-Visual Bureau's graphic arts laboratory. The total cost of this production was approximately $600, exclusive of personnel and initial cost of equipment. This philosophy symposium was later used for study in graduate seminars and in undergraduate classes in the Department of Philosophy.

The success of this initial experiment provided the basis for a Fellowship Grant requested by the Department of Philosophy under NDEA with the sound-on-film recording technique as a specific part of the proposal for future philosophy symposia. Since the initial experiment, three single-system sound, 16mm motion picture symposia have been produced.

## DEPARTMENT OF HISTORY

Memorandum To: Kenneth M. McIntyre, Director, Audio-Visual Bureau

From: William M. Geer

As the instructor of the large experimental section of our course in Modern Civilization II for the Spring Semester 1960-61, I feel very indebted to you as Director of Audio-Visual Education Bureau and to your very competent staff for the assistance which you gave me in the preparation and presentation of films for the instruction of our students. I regard the experiment in using selected films in that course as a very successful one. There is every indication that student reaction to the films was favorable and even enthusiastic.

As I look back upon this joint effort in which you and I engaged I feel reasonably content with what we were able to accomplish. You will recall that in the initial phases you assigned to me Mr. Douglas Steeples to assist in previewing and making critical analyses of films which I felt might be of possible interest in this course. Mr. Steeples was a good choice. His assistance was competent and his critical evaluations were superior. I made a careful effort to be highly selective in choosing the films from your library and from your catalogues. The result was, that we were able to present for the students, in a tight schedule and in co-ordination with my lectures, a group of very useful documentaries dealing with specific aspects of our course material. In each case the film was scheduled for a particular day and a particular part of the lecture hour, and I believe that I can say that in every instance your staff coordinated with my schedule perfectly. I do not recall a single instance in which our work was delayed or any instance in which your staff was not in the room and ready at the appointed time. This dependability was of great relief to me.

Would you kindly express to the members of your staff my appreciation for their kind cooperation.

Cordially yours,
William M. Geer, Dept. of History

Modern Civilization II, Section 10, 104 Howell Hall, 9 a.m. on the dates indicated Spring Semester, 1960-61
William M. Geer, Instructor

## Special Schedule for Films

| | | | Time Length: |
|---|---|---|---|
| Mar. | 13 | "World War I: Role of the USA" EBF | 28 minutes |
| | 22 | "Nightmare in Red" | " " |
| | 29 | Film on Hitler | " " |
| Apr. | 10 | Film on U.S. Depression | " " |
| | 17 | "World War II: Prologue, USA" EBF | 28 minutes |
| | 24 | Film on United Nations | " " |
| May | 1 | "Problems of the Middle East" Atlantis | 21 minutes |
| | 3 | "Black and White in South Africa" McGraw-Hill | 27 minutes |
| | | "Report from Africa" McGraw-Hill, 5 reels | 2 hours |
| | 8 | "Assignment: India" EBF | 56 minutes |
| | 10 | "China Under Communism" EBF | 22 minutes |
| | 22 | "South America" IFF | 27 minutes |

## DEPARTMENT OF PHYSICS

**Memorandum To:** Kenneth M. McIntyre, Director, Audio-Visual Bureau

**From:** Joseph W. Straley, Professor of Physics

In June 1960 in cooperation with the Department of Audio-Visual Education the Department of Physics at the University of North Carolina initiated an experimental program in Audio Visual Education. The scope of the program was quite wide and almost entirely experimental.

I. Films - Locally Produced. Three films totalling approximately 75 minutes were produced during the summer of 1960 on the subjects:

1. Error in Physical Measurements
2. Electrical Devices
3. Physics at UNC

The first of these has been extensively used in connection with laboratory instruction at the Sophomore level. Certain technical corrections must be made in the second before it be utilized. The third was intended for public information and sould see use soon.

Criticism: The system of film production used here involved simultaneous photography and sound recording. While this technique achieves the desirable objective of yielding "lip synchronization" it has a number of undesirable features.

1. The resulting film is impossible to edit or correct.

2. The inexperienced performer spends more of his effort on concerns about diction and appearance than these merit.

3. The camera inevitably centers on the performer rather than the apparatus.

4. A disturbing change in voice quality occurs when one interrupts the sequence to change apparatus.

It is the belief of this observer that locally-filmed physics instruction films should be filmed in "silent" version and striped with magnetic tape.

II Films - Commercial films

This instructor is unwilling to surrender large blocs of class time to the showing of such films as are known to him at the present. However, as a sort of extra-curricular activity commercial films have been shown to students who attend on a free-option basis. During the Fall Semester these films were shown during the period 7:30-8:00 P.M. each Tuesday evening; during the second semester the showings were shifted to 3:30-4:00 P.M. Extra showings were worked in upon demand. An average audience of 25 students were in attendance.

The only good physics films available on a piece-meal basis are those produced by the Physical Sciences Study Committee (PSSC). Others of a more general nature are produced by the National Academy of Sciences.

## III The Overlay Project

In the teaching of large sections of introductory physics the writer has made increased use of an overhead projector. In quickly transmitting information relative to the construction details of apparatus, the essentials of electrical circuits, and the stages in the solution of problems using multi-colored overlays on acetate have proven very valuable.

With the help of a graduate assistant and the Bureau of Audio-Visual Education the writer has prepared 65 overlays dealing with as many separate basic ideas in physics. These overlays have proven effective and have the additional merit of being usable from one year to the next.

The Department of Physics has recently purchased equipment to enable them to make acetate transparencies in their own facilities.

## IV Miscellaneous Smaller Projects

(A) The Department of Audio-Visual Education has served as consultant in the purchase of 2 new multi-purpose slide projectors (to accomodate both 2" x 2" and 3 1/4" x 4" slides).

(B) Under the stimulation of this project the Department of Physics has purchased a new Bell and Howell Movie Projector.

(C) Again guided by the new interest in Audio Visual devices the Department of Physics has purchased a Polaroid Land Camera and has experimented in its use as a teaching aid through the possibility of making "instant" black and white transparencies.

(D) The graduate assistant has aided in miscellaneous tasks in mechanical drawing.

## SCHEDULE OF PHYSICS FILMS TO BE SHOWN FALL SEMESTER, 1960

| Play Date | Title | Run Time | Source | Subjects for Lecture |
|---|---|---|---|---|
| 9-20-60 | Measurement & Error | 25 min. | (A) | Vectors |
| | Measurement | 22 min. | (B) | Vel. & Acc. |
| 9-27-60 | Vectors | 28 min. | (B) | Particle |
| | Forces | 23 min. | (B) | Dynamics |
| 10-4-60 | Falling Bodies | 30 min. | (B) | Friction |
| | Inertia | 27 min. | (B) | Work, Energy, & Power |

## SCHEDULE OF PHYSICS FILMS (Continued)

| Play Date | Title | Run Time | Source | Subjects for Lecture |
|---|---|---|---|---|
| 10-11-60 | Energy & Work | 29 min. | (B) | Momentum & Impulse |
| | Straight Line Kinematics | | (B) | |
| 10-18-60 | Science in Space | | (E) | Rotation |
| | Deflecting Forces | | (B) | |
| 10-25-60 | Artificial Earth Satellites | | (F) | Dynam. Systems |
| | Inertial Mass | | (B) | Elasticity |
| 11- 1-60 | Vibrations and Waves | | (H) | S. H. N. |
| | The Pendulum | | (H) | |
| 11- 8-60 | Open Date | | | Fluids |
| 11-15-60 | Mech. Energy & Thermal Energy | 22 min. | (B) | Temperature Heat |
| | Mech. Equivalent of Heat | | (H) | |
| 11-22-60 | Crystals | | (B) | Heat |
| | Crystals-An Introduction | 25 min | | |
| 11-29-60 | The Ultimate Structure | | (G) | Atoms |
| | The Inconstant Air | | (E) | |
| 12- 6-60 | Open date | | | Heat Trans.<br>Gases |
| 12-13-60 | Christmas Holidays begin | | | |
| 1- 3-61 | The Story of Time | | (F) | Thermodynamics Waves |
| | Heat Energy and Gas Laws | | (H) | |
| 1-10-61 | Simple Waves | | (B) | |
| | Science of Sound (Record) | | | Waves Sound |
| | Similarities in Wave Behavior | 26 min. | (C) | Sound |
| 1-17-61 | Classes terminate 1-18-61 | | | |

## DEPARTMENT OF LAW

A member of the Law School faculty who taught a course in Trial and Appellate Practices needed a film to show his students some of the finer points of local law. A sound-on-film recording was made in the office of an experienced attorney showing the initial interview between the attorney and his client. This film was in one 40 minute sequence and it was filmed with a single-system sound camera. The film entitled AUTOMOBILE ACCIDENT--INITIAL INTERVIEW WITH CLIENT was used in a class on Trial Practices. The students had seen a film produced by a commercial motion picture company prior to viewing the experimental film produced by the project. Since both films were based on the initial interview with the client in an automobile accident case, there was excellent basis for comparison. The law professor quotes, "The students felt that the experimental film served their need for a film, directly devoted to legal procedures in North Carolina, better than the commercial film in spite of some technical advantages primarily involving single-system sound. Other commercially produced films were selected, evaluated and used in classes by various Law School professors.

Another member of the Law School faculty has developed the use of the thermo-fax printer on class to make transparencies of legal forms which can be immediately used on the overhead projector. This utilization of simple production techniques in the classroom has increased the use of the overhead projector in the School of Law to a considerable degree.

| DEPARTMENT | COURSE TITLE | TEACHER | GRADUATE ASSISTANT |
|---|---|---|---|
| Dentistry | Endodontics | Shankle | Daughtry |
| English | Shakespeare | Lyons | Garrow |
| | Interpretation of Literature | Lyons | Garrow |
| | Seminar: Studies in Elizabethan Literature | Lyons | Garrow |
| History | North Carolina I 1584-1835 | Lefler | Steeples |
| | North Carolina II 1835-1950 | Lefler | Steeples |
| | Modern Civilization II, Sect. 10 | Geer | |
| Law | Admiralty | Baer | Alvis |
| | Debtor Estate | Baer | Alvis |
| | Trial and Appellate Practices | Baer | Alvis |
| Philosophy | Introduction to the Philosophy of Religion | Natanson | Schmitz |
| | Philosophy in Literature | Natanson | Schmitz |
| | Philosophy of History | Natanson | Schmitz |
| Physics | General Physics | Straley | McCloskey |
| | General Physics | Straley | McCloskey |

PILOT COURSE SCHEDULE - FALL 1960

# APPENDIX C

## SAMPLE MATERIALS FOR DISSEMINATION OF INFORMATION AND EXPRESSIONS OF FACULTY ATTITUDE TOWARD THE USE OF AUDIOVISUAL MEDIA

........................................................................

The following instructions were distributed to all departments on campus regarding the use of 2" x 2" slide series synchronized with continuous tape recordings. Numerous slide series, e.g., "UN Seminars Abroad," "Goettingen Scholarships," and various programs on academic affairs and student activities were produced.

### A. PROGRAMMING INSTRUCTIONS FOR 2" x 2" SLIDE SERIES

Programming a slide series for the Kodak Carousel 2" x 2" slide projector and synchronizing slides with a continuous tape recording is a relatively simple procedure if these instructions are followed:

1. Student groups will clear the program through YMCA or YWCA Secretary's Office--this office will approve and schedule a conference with the Director of the Audio-Visual Bureau for bonafide student organizations.

2. Have collection of 2" x 2" color slides in cardboard readymounts (glass mounted slides cannot be used).

3. Exactly 80 (2" x 2") slides must be selected in order to run continuously (36 or fewer 2" x 2" slides may be programmed in Cavalcade repeater for shorter sequences by special request).

4. Slides must be organized for scripting by individuals who are familiar with content and who will supervise the programming.

    (a) Programming instructions--Step A

    Arrange slide sequence with identifying captions (see sample attached).

    (b) Programming instructions--Step B

    Arrange slide sequence in desired continuity and coordinate script--not more than four (4) pages double spaced. Slides must be numbered and keyed to script (see sample).

5. Make appointment with Director, Audio-Visual Bureau for recording script and synchronizing narration with background music and 6500 cycle signal for projector operation.

6. Final phase will be coordinated by Bureau of Audio-Visual Education. For further information contact:

Kenneth M. McIntyre, Director
Bureau of Audio-Visual Education
111 Abernethy Hall

B. AUDIO-VISUAL RESOURCES FOR COLLEGE TEACHING

A 16-page illustrated brochure describing the Audio-Visual resources for college teaching at the University of North Carolina. Introduced by the Chancellor and the Dean of the Faculty (100 copies supplied to Educational Media Branch, Office of Education, U. S. Department of Health, Education and Welfare, under the terms of HEW Grant, #731052).

C. NEWS LETTER TO THE FACULTY, Vol. 1, No. 1, and Vol. 1, No. 2, Chapel Hill, North Carolina, 1961.

An 8-page news letter published monthly during the academic year describing current Audio-Visual resources and practices of interest to college teachers.

## D. EXPRESSIONS OF FACULTY ATTITUDES TOWARD USE OF AUDIOVISUAL MATERIALS

As usual, the questions do not always come in forms which can be easily answered. In art history, slides are the core of the teaching, the lectures are built around them. Film strips are bad in our field at least because (a) they are usually of inferior quality, (b) they impose a sequence on the teacher which cannot be altered.

Films on art can be very useful, but (a) it takes somebody's time to get the film, have an operator, etc., show it etc., and (b) the lecture etc. have to be arranged around the film. It takes much planning and thus requires additional time. Only a few art films are really good, but they are so good that the lack of them is, I believe, a distinct handicap.

TV is not, I believe, quite perfect enough as yet for the best art teaching because there is insufficient definition of the image. Projected slides are bad enough, but this ordinary TV screen is far worse. I suspect (but don't know) that color TV is very inaccurate.

It is hard to answer questions about willingness to teach on TV without knowing more precisely what the circumstances might be. I would be glad to experiment in this field.

. . . .

For instruction in Chemistry slides and charts are far more important than film. Film is time-consuming but charts and slides present a much better picture than material drawn on the blackboard. Data can be used much more effectively when it can be projected on a screen.

. . . .

Because of a different discipline in which the writer is teaching suggestions have to be formulated separately.

(1) Principles of Economics. Because of the relatively short time available for teaching this subject adequately. Filmstrips (like the ones provided to go with Samelson's workbook) would have a certain value as an aid to education in economics. Could be shown at joint sessions of all sections of Economics 31 and 32 or at the regular class periods.

(2) Russian History and International Relations. Filmstrips and movies have relatively little value. Emphasis should be on maps large enough for classroom use showing political divisions, boundaries etc. very few maps having these requirements seem to have been produced in this country.

. . . .

I would like to produce or otherwise have available suitable filmstrips or Vu-graph transparencies which show sequential steps:

1. In development of an analytical solution to selected problems.
2. In information processing.
3. In the physical operations of certain business enterprises.

I would like to supervise the production of a series of wall charts (on pull-down rolls) related to each course to provide easy reference to statements of objectives, flow charts, selected symbolic diagrams, reports, etc.

I would like to have available a large flannel roll which could be used with individual visual components on cards to focus attention on the development of ideas or to emphasize the relationship of certain groups of procedures or concepts.

All materials need to be carefully integrated into the overall instructional plan so that the student remains active-minded during the presentation. Audio-visual materials are effective in some topics for introducing a topic and providing some realistic background which is often difficult for the instructor to provide verbally. In most topics carefully conceived diagrams presented on filmstrips, by Vu-graph or by some copying method are most useful in aiding the students to integrate the various elements of methodology and to serve as the basis for discussion which related methodology to theory (objectives or reasons). Once subject matter is introduced and discussed, if certain visual materials are readily available, they often help in expediting and clarifying answers to questions and in guiding review.

. . . .

My experience with audio-visual techniques has, on the whole, been satisfactory. I have been able to secure the equipment, services, and materials necessary to attain the results wanted.

However, I doubt if my experience is typical. I have been able to use funds and personnel not available to many college teachers. Moreover I have made extensive use of a do-it-yourself approach.

If certain services were available at a reasonable cost I might buy more and make less, e.g. lettering for charts and flannel board presentations.

. . . .

I would like to be able to take motion pictures of students in public speaking classes. Delivery especially gestures, could be taught much faster & effectively. (Northwestern School of Speech found this to be true.)

. . . .

I myself teach the foreign language and the foreign literature on the higher level. There are younger men in my department who know much more than I do about the value of audio-visual materials in the field (one of them has taught a television course on the elementary level). On the higher level the student has to (1) still improve his knowledge of the language and (2) read a great deal of literature in that language. I confess that I am not sure to what an extent audio-visual materials could be helpful to him. One thing is certain: he has to do a great deal of reading in the foreign language. How could he be helped audio-visually? Show him pictures of authors? They are available, of course. Now and then there may be old pictures, I mean films, of masterpieces that might be helpful to the student. Beyond this I have no suggestions. Be assured that I am convinced of the great value of audio-visual aids, especially on the elementary level in foreign language instruction. And I am convinced of the invaluable help of audio-visual methods in many other college subjects, especially in serving classes of great numbers of students.

. . . .

Elementary language classes (1st through 4th semester) must meet five, not three times a week in order to be effective. When 5 hrs/wk are available, audio-visual aids will be very helpful. At 3 hrs/wk, they take up valuable time. They do not speed up instruction, but they do add valuable information.

Our budget is TOTALLY inadequate for aids. Our most important aid-in-being, the language lab, is pitiful. (37 earphones for two thousand students!!!) Here, money is the most urgent immediate need.

. . . .

I would like to have all audio-visual aids available for normal, routine classroom use, with proper projection equipment and staff. I also need staff assistance in the selection of materials and in the preparation of slides.

. . . .

Slides of medieval materials, especially., reproductions of manuscript miniatures. Projection machine set up in classroom permanently for use any day. Player for records (medieval music) and records (I have some).

. . . .

1. I would like to have audio-visual equipment delivered and picked up.
2. I would like a better universal catalog of available materials in my field.
3. I would like more A-V material prepared on a collegiate level--(much of it seems too simple to me).
4. I would like to have ways of producing A-V material quickly and cheaply so I can keep classes current.

. . . .

One uses materials most readily where the classroom one is assigned is equipped properly. Trying to arrange special meeting places and lugging equipment around is definitely a serious deterrent. Since audio-visual aids are only supplementary to the main work of a course, sometimes essentially and sometimes only peripherally so, the chief issue is the relative value of time use-in class preparation and in-class work. These relative values vary from course to course.

AV Media RESEARCH

BUREAU OF AUDIO-VISUAL EDUCATION

THE UNIVERSITY OF NORTH CAROLINA

KENNETH M. McINTYRE, *Director* Chapel Hill

# *News Letter to the Faculty*

May 1, 1961 (Telephone 968-4493) Vol. 1 No. 2

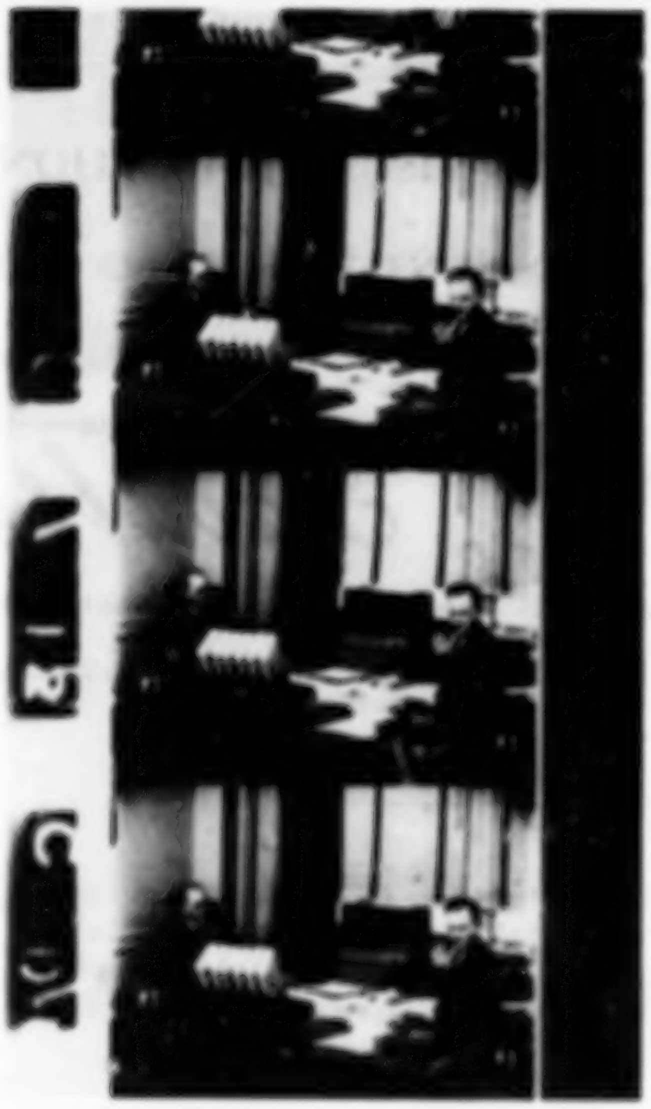
## SOUND-ON-FILM RECORDING AS A TEACHING AID

The photograph of a lawyer interviewing a client (see cut following page) was printed from a strip of 16mm motion picture film. This sound-on-film recording was made last fall in the office of an experienced Raleigh attorney. This type of motion picture production is known as a sound-on-film recording since the picture and sound track are recorded simultaneously.

The particular sequence shown on the film was taken from a 16mm motion picture sound-on-film recording entitled AUTOMOBILE ACCIDENT: INITIAL INTERVIEW WITH THE CLIENT. This is the first sound-on-film recording in the LEGAL EDUCATION SERIES to be produced for the University of North Carolina School of Law by the Audio-Visual Bureau. It is currently being used by Professor Herbert Baer in his senior law class on Trial Practice. The reaction of both Mr. Baer and the students to this type of film as an effective teaching technique is most favorable. The subject covered by the film is typical of the sort of situation in which the sound motion picture is without question the best way of presenting the matter to the student. During the making of the film, which was directed from the legal point of view by Professor Baer, the attorney and Mr. Baer were able to consult with each other at each 15 minute break in the sequence. Direct collaboration on the part of the professor who plans to use the film is one major advantage of this type of teaching material. In addition to eliminating expensive editing and processing costs the sound-on-film recording incorporates the inherent characteristics of the motion picture as a teaching tool. Although the quality of the sound is not comparable to that of a commercially produced 16mm motion picture, the difference is barely noticeable to the normal listener. It does provide lip synchronization, however, which makes possible the reproduction of a live experience in the classroom with a normal semblance of reality.

The cost of this 40 minute sound-on-film sequence was approximately one-tenth of the cost of a similar 16mm motion picture production. The film also

**The purpose of this newsletter is to provide information to the faculty on developments in radio, television, motion pictures, and related educational media for instruction and to report trends in utilization of the new media in other institutions of higher learning.**



has the advantage of being tailored to the needs of the college teacher who plans to use it in the classroom.

Plans are underway to continue the LEGAL EDUCATION SERIES as well as to record some Philosophy seminars during the next academic year. There may be other suggestions for the use of this teaching aid by members of the faculty in other disciplines. Arrangements can be made to investigate projects of similar nature at any time. Sound-on-film recordings may be stored for future classroom instruction or for departmental seminars. They can be projected with a standard 16mm sound motion picture projector in the classroom.

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Scene (left) from 16mm sound-on-film recording AUTOMOBILE ACCIDENT: INITIAL INTERVIEW WITH CLIENT.

## QUOTATION FROM RECENT FACULTY OPINION QUESTIONNAIRE

A senior member of the University faculty states:

"My experience with audio-visual techniques has, on the whole, been satisfactory. I have been able to secure the equipment, services, and materials necessary to attain the results wanted.

However, I doubt if my experience is typical. I have been able to use funds and personnel not available to many college teachers. Moreover, I have made extensive use of a do-it-yourself approach.

If certain services were available at a reasonable cost I might buy more and make less, e.g., lettering for charts and flannel board presentations.

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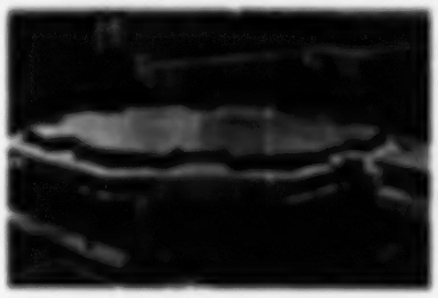
Graphics Laboratory: A complete graphics laboratory is now available to the faculty and the services of a commercial artist may be arranged by appointment. Graphic materials for slides, filmstrips, 10"x10" transparencies, and motion pictures can be prepared to meet the needs of individual faculty members.

## LEARNING AND INSTRUCTIONAL RESOURCES CENTER

The University of Miami's University College Building, an octagonal structure, was open for inspection by the delegates to the recent Department of Audio-Visual Instruction Conference in Miami, April 24-28. Miami's University College is our equivalent of the General College. The following description was excerpted from a flyer describing the building and facilities which will be ready for use in September 1961:

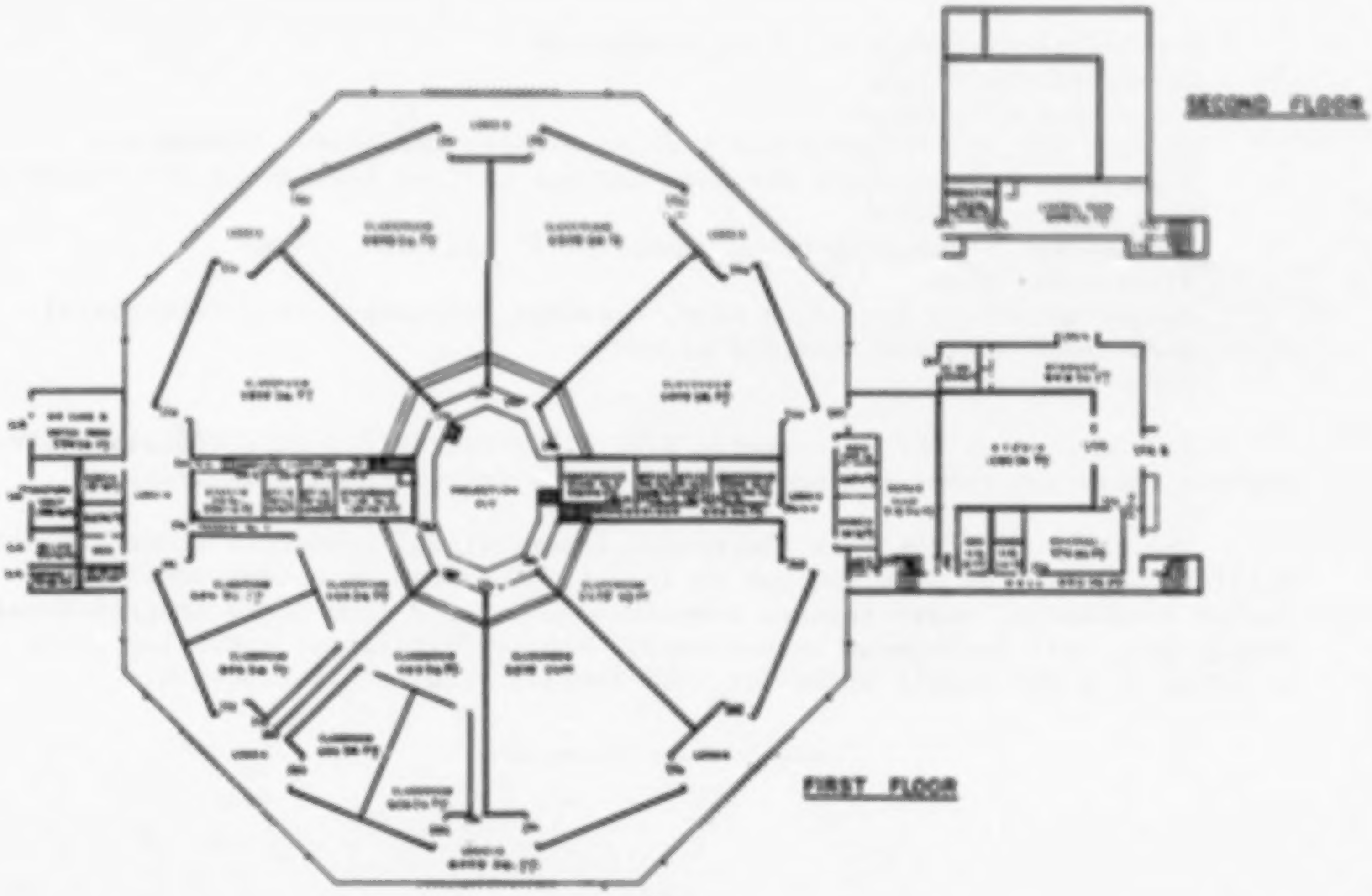
"At the University of Miami all freshmen and sophmores are registered in University College. To ensure knowledge of fundamentals the program includes studies in three areas required of all students: The Humanities, Social Sciences and Natural Sciences. Freshman registration in Humanities is approximately 3,000, with other areas comparably high in number.

"While the building is designed to accommodate large classes, the program of instruction has been carefully formulated to give the utmost attention to the individual student. Small discussion groups and seminars, with emphasis on direct communication between instructor and student, supplement large-class lectures.



"Although primarily intended for use by University College, the 300-seat classrooms, with complete aural and visual facilities, are used by students in the University's other schools."

(Continued on page 4)



The total seating capacity of this unique building is 2,400, divided into eight 300-seat classrooms. Two of the eight large rooms are sub-divided into three rooms with a seating capacity of 90 students each. The wedge-shaped rooms are arranged octagonally about a core or central projection room from which images are projected by rear screen projection on a ten-foot square screen located at the apex of each classroom. The lecture platform for each class is located in front of and to the student's left. The lectern is equipped with complete controls for room light-level, audio-level and remote control of a variety of projectors including projection of a television image produced live in a studio contiguous to the classroom building.

It is possible for 2,400 students to receive simultaneous instruction by closed-circuit television or any combination of classrooms and receive individual instruction through a combination of television and other audio-visual devices. For teaching convenience it is possible for a lecture to be recorded on video tape and played back to any combination of classrooms any number of times.

Currently in work are plans for an audience-response system serving each of the 2,400 seats with electronic devices capable of conveying thirty-one different student reaction responses to the instructor. These responses will be recorded to be summated for immediate or delayed analysis. Such records will constitute a reservoir of research information for the evaluation and revision of instructional methods. The mechanism will also be employed in testing and in certain phases of registration.

In addition to an experienced staff of technical personnel the instructor in the center has recourse to the following instructional aids:

2 television studios for live production
Kinescope recordings
Video tape recordings
Network and locally-produced live or delayed television broadcasts
Enlargement of in-class displays through vidicon cameras in the classroom
16mm motion pictures
Transparent slide projection, 35mm, 2"x2", 2¼"x2¼", 3¼"x4"
Filmstrips, 35mm
Opaque materials including maps, drawings, pictures, etc. (via video)
Audio tape and disc recorded programs
Radio programs

In addition to the instruction areas, the center contains administrative offices, dressing rooms and adequate space for instructional preparation.

The total cost for this electronic instructional resources center is one million dollars plus $600,000 for equipment. Compared with individual television studios and radio centers completely separated from other instructional facilities, this investment is reasonably modest in terms of operating costs prorated on a per capita basis for each semester hour of instruction.

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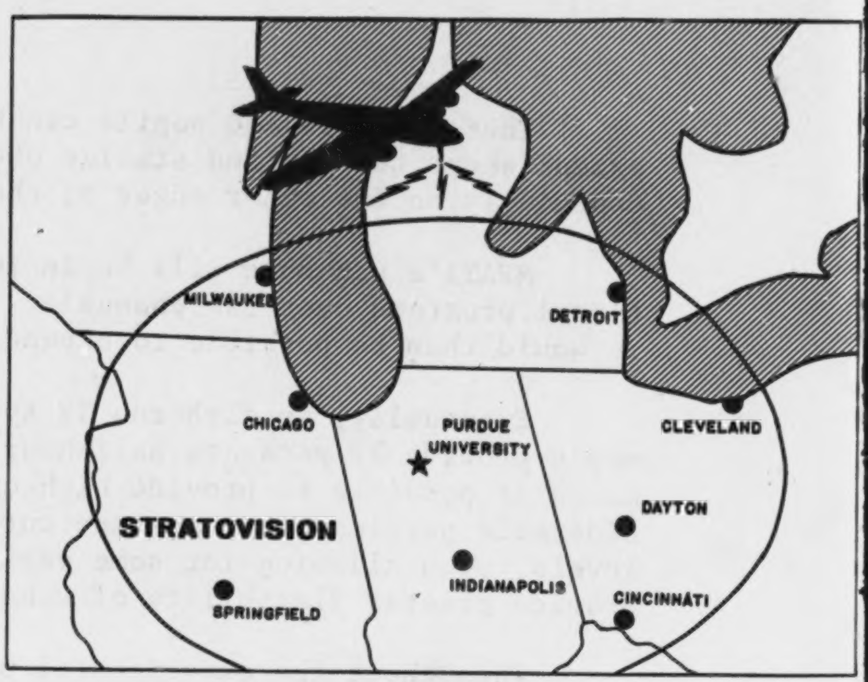
# Midwest Program On Airborne Television Instruction



**HOW HIGH IS UP?**

**Here is an exciting new adventure in education. An increase in educational quality and economic efficiency are prime goals. Airborne television to assist classroom teachers, and the evolution of a system of local-state cooperation for permanent management of the regional program are the prime means. Rigorous evaluation of the education, economic and management prospects will be incorporated into local, state and regional discussion and action. -- John E. Ivey, Jr., President MPATI**

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The Midwest Program On Airborne Television Instruction represents a promising opportunity to harness television to bring the highest quality of education to millions of youngsters, in large and small communities alike, more quickly and at less cost than by any other means available.

In a three-year experiment soon after World War II, the Westinghouse Electric Corporation developed and emonstrated the technical feasibility of airborne telecasting by delivering a satisfactory signal from an airborne transmitter operating at 25,000 feet to receiving sets as far away as 225 miles, where terrain conditions were favorable.

Recent engineering studies, drawing upon the technical findings of the Westinghouse "Stratovision" experiments, have laid the basis for the Midwest Program to telecast over two channels, and the eventual possibility of as many as six simultaneously from one aircraft. Such a system will enable the telecasting of courses by an outstanding faculty to schools and colleges over most of the territory within a radius of some 150-200 miles. A second stand-by aircraft will assure high reliability of operation regardless of weather conditions and equipment breakdown.

For example, within a radius of 200 miles of north-central Indiana there are more than five million students in over 13,000 separate locations. About one-third of these are in a school system of less than 2,000 pupils which for the most part are too small to provide a satisfactory education under present conditions.

These schools and pupils can be served by the transmitting aircraft except where terrain and similar obstacles cause reception "blindspots", especially on the outer edges of the circle.

MPATI's schedule will begin initially with the telecasting of instructional programs over two channels. If this pilot operation proves successful, it would then be possible to expand the service to six simultaneous programs.

Eventually, an airborne TV system transmitting six simultaneous programs could provide 72 separate half-hour units during a six-hour school day. This makes it possible to provide high-quality televised programs covering a considerable portion of the entire curriculum of a school system at all grade levels, even allowing for some repetition of programs at different hours to provide greater flexibility of scheduling for individual schools.

Throughout the experimental period of the project, MPATI will work with educators and lay groups in the six-state region to develop an appropriate form of organization and method of continuing financial support to sustain the program permanently after June, 1962. This, of course, is subject to renewal of channel allocations by the FCC. Such a permanent organization could be created by an interstate educational compact and pooling local and state school resources for the management and finance of the airborne TV program. It might also take the form of a voluntary association of local school districts. Time and study will be required for leaders in the region to determine what form of organization best fits their needs.

If the airborne experiment proves successful, it may serve as a pilot project for similar regional undertakings in other sections of the country. It has been envisioned that eventually a relatively small number of aircraft could provide coast-to-coast educational television coverage.

Total project costs: $7 million met by a $4½ million appropriation from the Ford Foundation and contributions by private industry.

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Professor Urban T. Holmes does two programs for the National Educational Television System which are scheduled for WUNC-TV Channel 4 in May.

LIFE IN THE MIDDLE AGES #1 May 19th , WUNC-TV Channel (4)

This special program was produced with Professor Urban T. Holmes, one of the most distinguished mediaeval scholars in this country. He is Kenan Professor of Romance Philology at the University of North Carolina and Consulting Professor in the Department of Foreign Languages at Michigan State University. In this presentation Professor Holmes shows how many of the traditions of today date back to the Middle Ages. Among other things he discusses, with illustrations, the classes of society, costumes, homes and castles, furnishings, hours of the day, music, and minstrels and dancers.

LIFE IN THE MIDDLE AGES #2 May 26th, WUNC-TV Channel (4)

The second of two programs with Professor Urban T. Holmes, Jr., Kenan Professor of Romance Philology at the University of North Carolina. Professor Holmes discusses and illustrates scientific beliefs and practices of the Middle Ages. The counting board, the quadrant, and the compass are some of the mediaeval devices included in this interesting program.

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Faculty Advisers: The U. S. Department of Health, Education, and Welfare, Office of Education recently announced a new small grants program to encourage graduate students and teachers to conduct research in educational uses of mass media in elementary and secondary schools, colleges and universities.

Each research project must be completed within a year. The researcher may study methods for utilizing all or any of the media. These include motion picture films, television, radio, recordings, filmstrips, language laboratories and teaching machines.

Application for grants not to exceed $2,500 should be filed with the Educational Media Branch, Office of Education, U. S. Department of Health, Education, and Welfare, Washington 25, D. C. Applications approved by these groups will be reviewed by the National Advisory Committee for Title VII at its next meeting in Washington.

Contact the Audio-Visual Bureau for further information.

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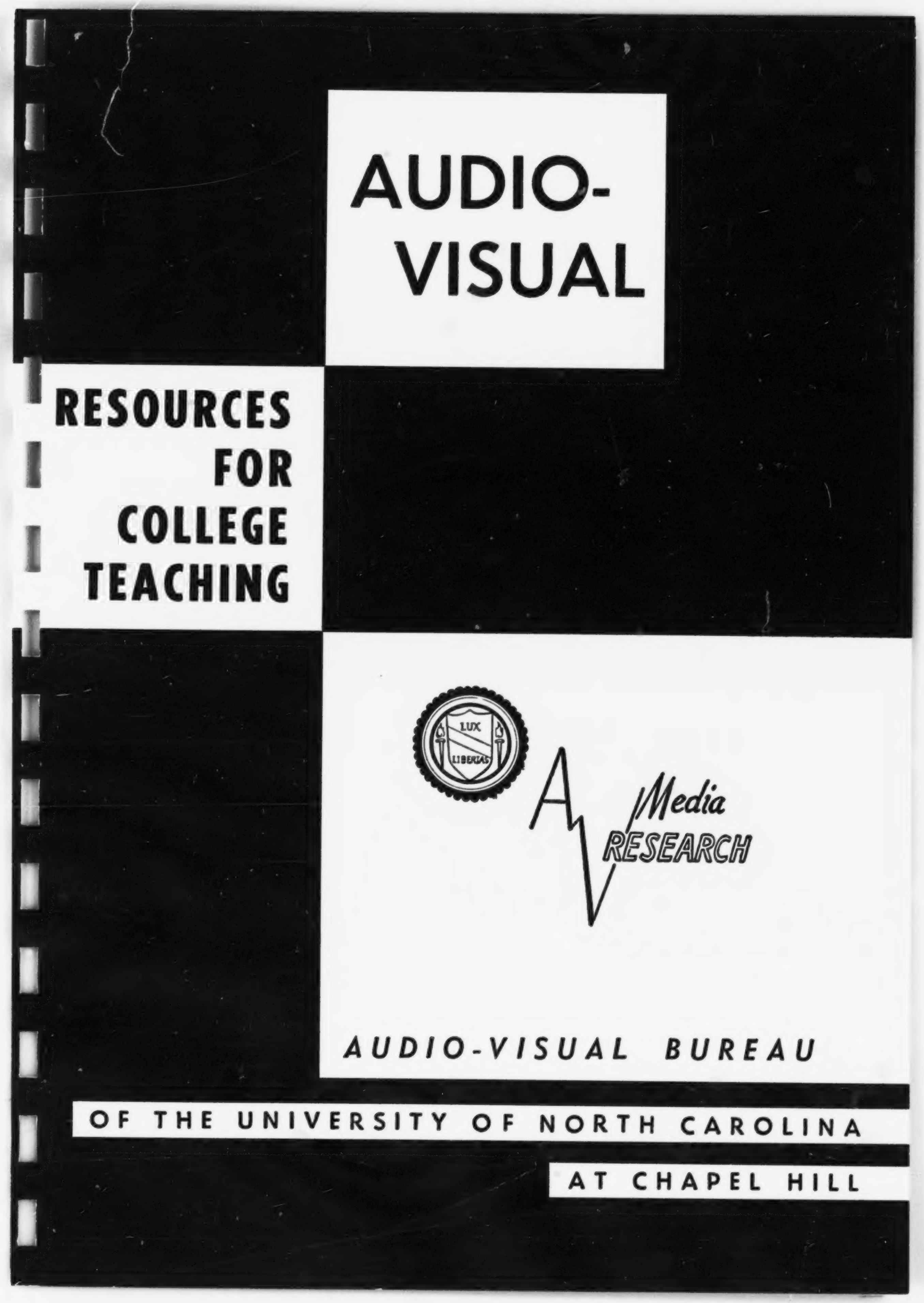
New Film Available for Preview - TROPICAL AFRICA, 29 minutes, sound, color; Produced by: International Film Foundation and the Twentieth Century Fund under direction of William Claiborne; Editorial Consultant: Dr. George H. T. Kimble.

No area in the world is more in the public eye today than Africa. And no continent is so little known and so much misunderstood. The old films of adventure and animal life gave a one sided and often distorted picture. It is also true that many of the pictures made to enlist support for Christian missions were somewhat biased. Our new documentary film entitled TROPICAL AFRICA encompasses three quarters of the great African continent. It is a frank attempt to make an intelligent primer, a stimulating introduction to that area of the world. Dismissing the pygmies and big game, we attempt to show the new Africa, a continent in political revolution and undergoing great social change. Primitive society is, of course, portrayed but only as it relates to the new life. The great movement is to the cities, to the new factories and mines. The struggle for self-government, the effort to establish schools, universities and hospitals, all these are shown as well as the rapidly changing relationship between black and white African.

Bureau of Audio-Visual Education
University of North Carolina
111 Abernethy Hall
Box 1050
Chapel Hill, North Carolina

Postage



# AUDIO-VISUAL

# RESOURCES FOR COLLEGE TEACHING

AV Media RESEARCH

AUDIO-VISUAL BUREAU

OF THE UNIVERSITY OF NORTH CAROLINA

AT CHAPEL HILL

The growing complexity of education and the increasing enrollment of students inevitably lead to greater demands on the faculty and increased use of teaching supplies and materials. We must also use the tools of modern instructional technology to maximum advantage if we expect to win the race between education and chaos.

W. B. Aycock
*Chancellor*

Chapel Hill
Site of the University of North Carolina which first opened its doors in January 1795

THE LONG RANGE PLANS of the University at Chapel Hill have been formulated with the assumption that the most efficient use, consistent with sound educational practice, will be made of all facilities.

One of the considerations of optimum use of instructional facilities was the extent to which it is economically feasible and educationally sound to adapt closed circuit television and other audio-visual aids for widespread use in college teaching.

Some of the barriers to optimum use of audio-visual aids for instruction in college teaching are being explored in this research project under a grant from the U. S. Department of Health, Education, and Welfare to the Audio-Visual Bureau of the University of North Carolina at Chapel Hill.

It is hoped that University faculty members will express their opinions regarding the use of audio-visual aids in their classrooms and on student self-study techniques to supplement regular instruction.

JAMES L. GODFREY
*Dean of the Faculty*

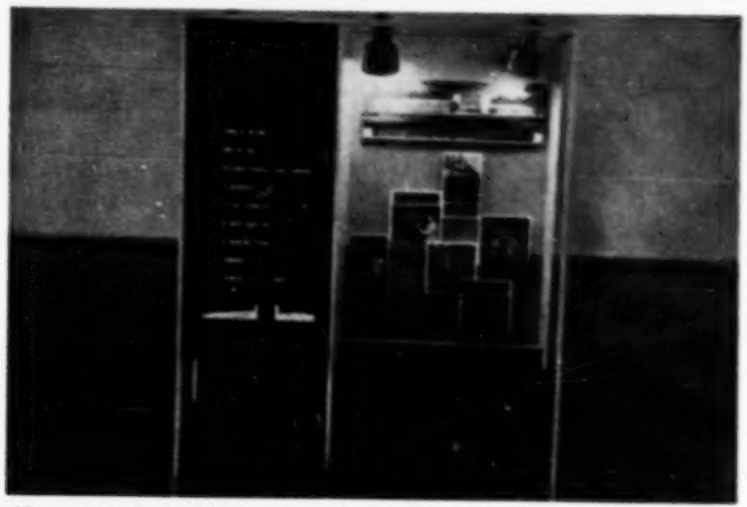
## Charts and Maps for Teaching

Hugh T. Lefler, Kenan Professor of History, emphasizes a point with a chart of early explorations. Charts and maps in practically every area of instruction are available today from commercial publishers. In addition to this the graphic art services of the Audio-Visual Laboratory are designed to assist faculty members in preparing charts and graphs to illustrate a specific idea or principle, using a variety of materials and techniques.

## Feltboard-Graphics-Exhibits

Rex Winslow, Professor of Economics and Director of the Bureau of Business Services and Research uses the feltboard, the flip chart and other graphic techniques in his teaching and in his adult education activities. Any member of the University faculty who needs to illustrate an idea, visualize a principle, or summarize a set of facts graphically, is invited to visit the Audio-Visual Laboratory to discuss his graphics problem. Here the teacher's understanding of the subject is combined with the skill of the specialist in graphic presentation. The work progresses through the stages of planning, simplification,. and rough sketch to the completion of a teaching tool designed to meet a specific communication need. Graphs, charts, illustrations, posters, maps, diagrams, other visual aids, and exhibits can be produced through these facilities for the cost of time and materials.

Lettering and art work are basic essentials of a good exhibit for communicating an idea.



Chemstrand Exhibit, *Courtesy Bank of Chapel Hill.*

Clifford P. Lyons, Professor of English, uses many magnetic tape and disc recordings in his Shakespeare course.

## Recordings—Disc and Magnetic

Students can spend many rewarding hours listening to long-play records of Shakespearean productions after having them introduced on class.

Professor Lyons demonstrates to students after class some of the Shakespeare materials available on magnetic tapes and disc recordings.

Henry Brandis, Dean of the Law School, introduces a motion picture film on legal procedures to one of his classes.

## Motion Pictures for Instruction

Modern 16mm instructional motion pictures are available today in subject areas ranging from Law through the Sciences and the Humanities. An instructional motion picture may illustrate a difficult scientific concept by means of animation and other elements of motion picture photography or it may re-enact a historical episode.

The photographs shown here are actual scenes from instructional films in Chemistry, Physics, and from Hamlet in a Humanities series. Some of these motion picture series were designed to teach an entire course on film, using a prominent college professor as the Master Teacher.

*Courtesy of Encyclopaedia Britannica Films*

J. P. Harland, Professor of Archaeology, uses standard 3¼"x4" lantern slides to illustrate his Archaeology lecture.

## Slides, Filmstrips & Opaque Projector

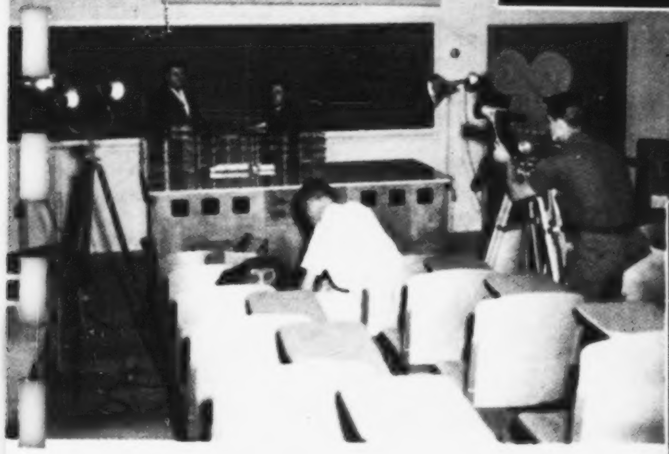
Other college uses of still pictures are illustrated here in the *overhead projector* built into a standard metal desk making 10"x10" transparencies immediately available to the instructor at any point during his lecture.
*(Photo courtesy Charles Beseler Co.)*

A *35mm filmstrip* on various subjects can be purchased commercially or it may be produced locally to suit the needs of an individual faculty member.

The *Opaque projector* fills a need not provided by any other audio-visual aid. Rare publications or photographs that cannot be reproduced in other forms may be flashed on the screen by reflected light with the opaque projector. The size of this audio-visual instrument however may create a viewing problem for some members of a large class unless the projector is carefully placed.

# Production of Teaching Materials

Robert J. Shankle, Associate Professor of Operative Dentistry, performs a delicate dental operation in a closed circuit television studio. As Dr. Shankle performs an in-the-mouth operation viewed by students on a classroom TV screen, he points out the details of the operation from a diagram of the tooth on a three color transparent overlay projected through the closed circuit television system from an overhead projector. Students may ask questions during the operation by means of a two-way communication system.



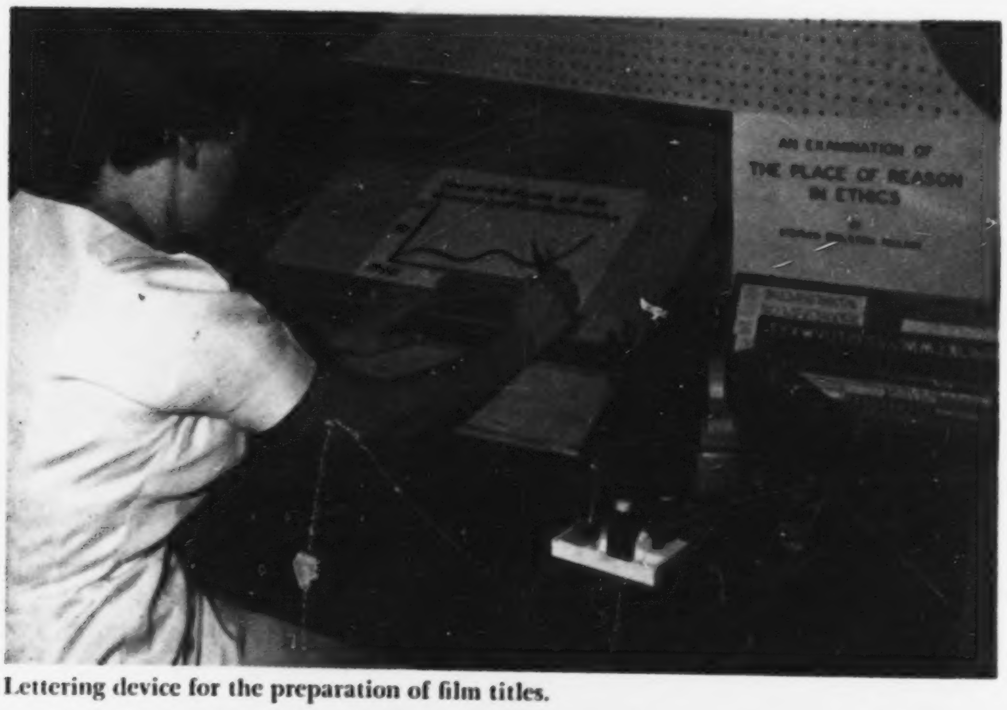
Everett Palmatier, Kenan Professor of Physics and Chairman of the Physics Department, makes a sound-on-film-recording (16mm motion picture) of an introductory lecture-demonstration in conjunction with a series of filmed lectures in Physics to be produced by Joseph Straley, Professor of Physics, for an undergraduate Physics course.

Duplication of tape recordings of pre-recorded magnetic tape productions on numerous topics can be made in the tape recording laboratory of the Audio-Visual Bureau. Recording services for faculty seminars, colloquia, adult education conferences, lectures, and many other activities may be prepared for use in the college classroom.

## Sound on Film Recording

This photograph of visiting British philosopher, Stephen E. Toulmin, was printed from a 16mm motion picture frame. The sound-on-film recording was made during his recent visit to the campus sponsored by the Duke and Carolina Philosophy departments. Professor Toulmin, from the University of Leeds, is discussing his book, *The Place of Reason In Ethics.*

Professor Maynard Adams of the University's Philosophy Department and Professor Robert Binkley of the Duke University Philosophy Department are questioning Toulmin's philosophical position in his book. Sound-on-film recordings of this nature are unedited 16mm motion picture films with a regular sound track. Films of this type may be stored for future classroom instruction or departmental seminars. They can be projected on a standard 16mm sound motion picture projector.



Lettering device for the preparation of film titles.

A dry-mount press in use, dry-mounting flat photographs for projection in the opaque projector.

## Instructional Materials Laboratory

One of the barriers to the use of audio-visual materials by college faculties is the lack of commercially produced instructional materials designed to serve the needs of the individual college teacher. The sound-on-film recording and the magnetic tape recording previously illustrated are examples of techniques for preparing college level materials designed by the faculty member. The instructional materials laboratory can provide graphic arts materials and services. Once the art work is prepared materials may be reproduced from the original drawings in several forms for classroom use, e.g., slides, transparencies, or flat pictures.

*Origin of Transparency*

The transparency originates with an idea and is then reproduced from a print of existing material or from an original drawing by an artist.

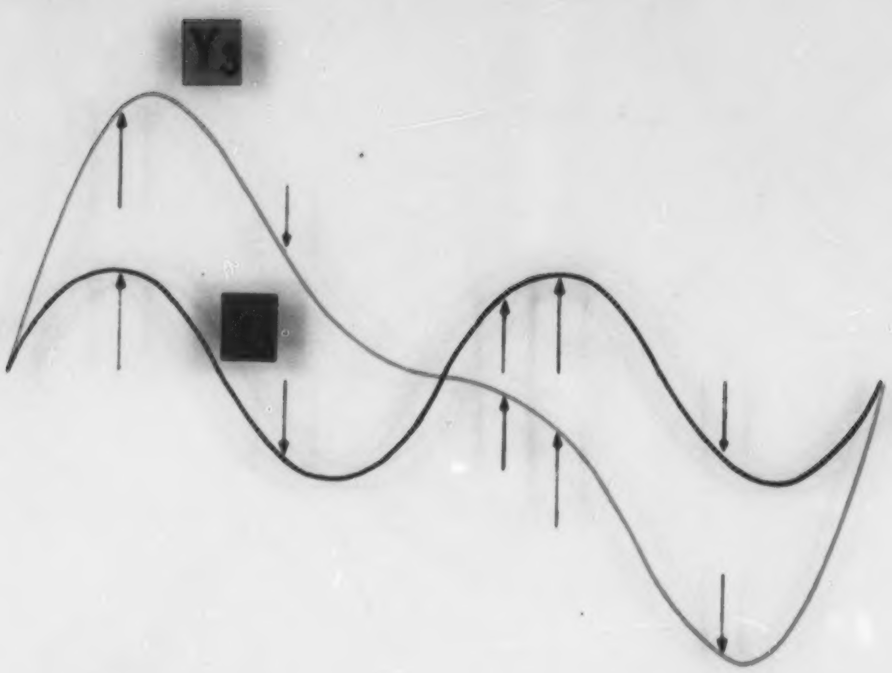
## Transparencies for Teaching

*Printing Transparency*

Next the original material is printed on a diazo treated acetate and subjected to ultra-violet light in a simple diazo printer.

*Completed Transparency*

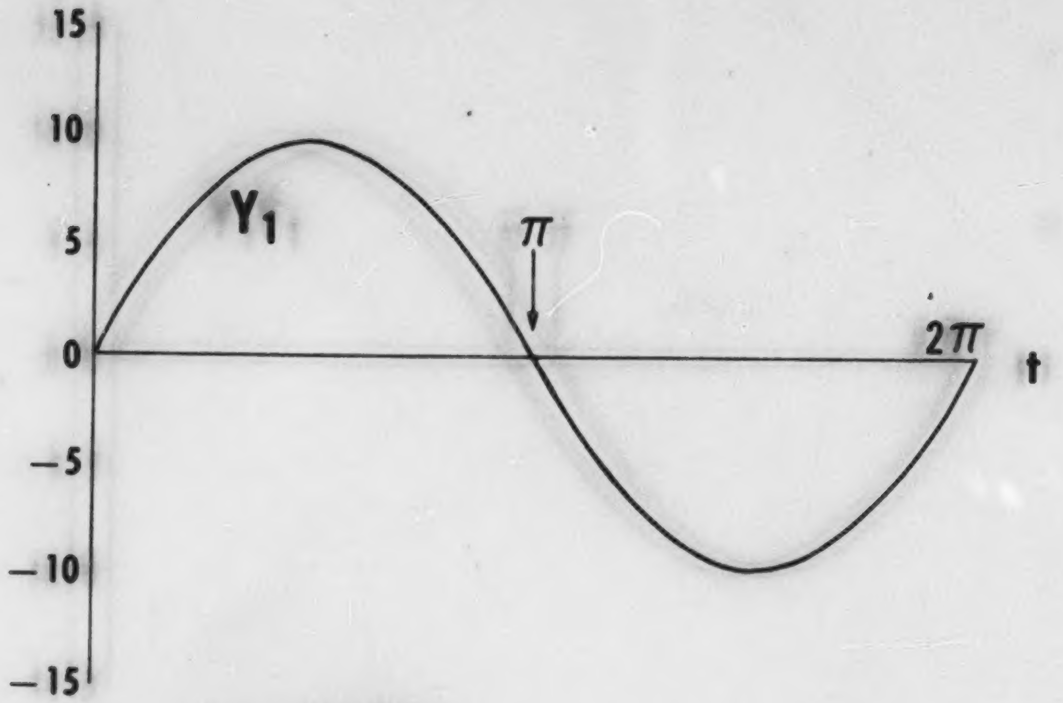
The completed transparency may be either a 10"x10" single sheet of transparent acetate or multi-colored transparent overlays, ready for use on the overhead projector.



[illegible] = [illegible] SIN [illegible]

$Y_3$ = 10 SIN t + [illegible] SIN [illegible] = $Y_1$ + [illegible]

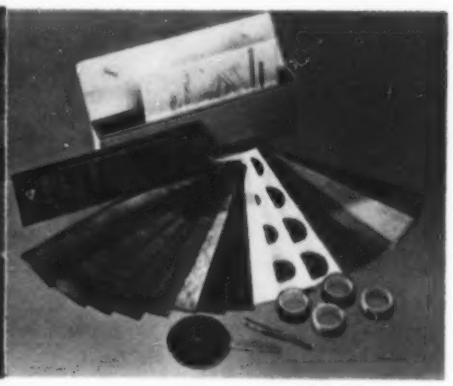
# GRAPHICAL ADDITION OF TRIGONOMETRIC FUNCTIONS



$Y_1 = 10$ SIN $t$

*Sample Transparency Courtesy Robert J. Brady Co.*

**This sample three-color overlay was taken from a complete set of transparencies for a course in trigonometry. Transparencies projected on the overhead projector (bottom left) may be animated with a Polaroid device giving the optical illusion of motion when projected. Polarized light shining through strips of material placed along the lines of a transparency to be animated can be added quickly and simply. A Technimation materials kit is shown (bottom right).**



# Audio-Visual Services

Robert Rupen, Associate Professor of Political Science, projects an 8mm film for his class in the Audio-Visual Bureau's air-conditioned projection room in Abernethy Hall. Professor Rupen made this 8mm motion picture film on a recent trip to Outer Mongolia. This projection room is used extensively for the projection of instructional 16mm motion picture films and other projected materials by faculty members who have no other projection facilities available. It is also used for professional conferences and other University adult education activities.

## AUDIO-VISUAL BUREAU STAFF

**Kenneth M. McIntyre**, *Director*

**Elizabeth Tripp**, *Supervisor*
**Susan Stoehr**, *Secretary*

**Paul Sparrow, Jr.**, *Technical Assistant*
**Margaret L. Cutchin**, *Film Librarian*

### AUDIO-VISUAL LABORATORY

**Robert M. Brown**, *Research Associate*
**Mary Ruth Duncan**, *Secretary*

*Graduate Assistants*

Jerry S. Alvis—Law
Curtiss W. Daughtry—Dentistry
A. Scott Garrow—English
James McCloskey—Physics and Education
Alfred O. Schmitz—Philosophy
Douglas W Steeples—History

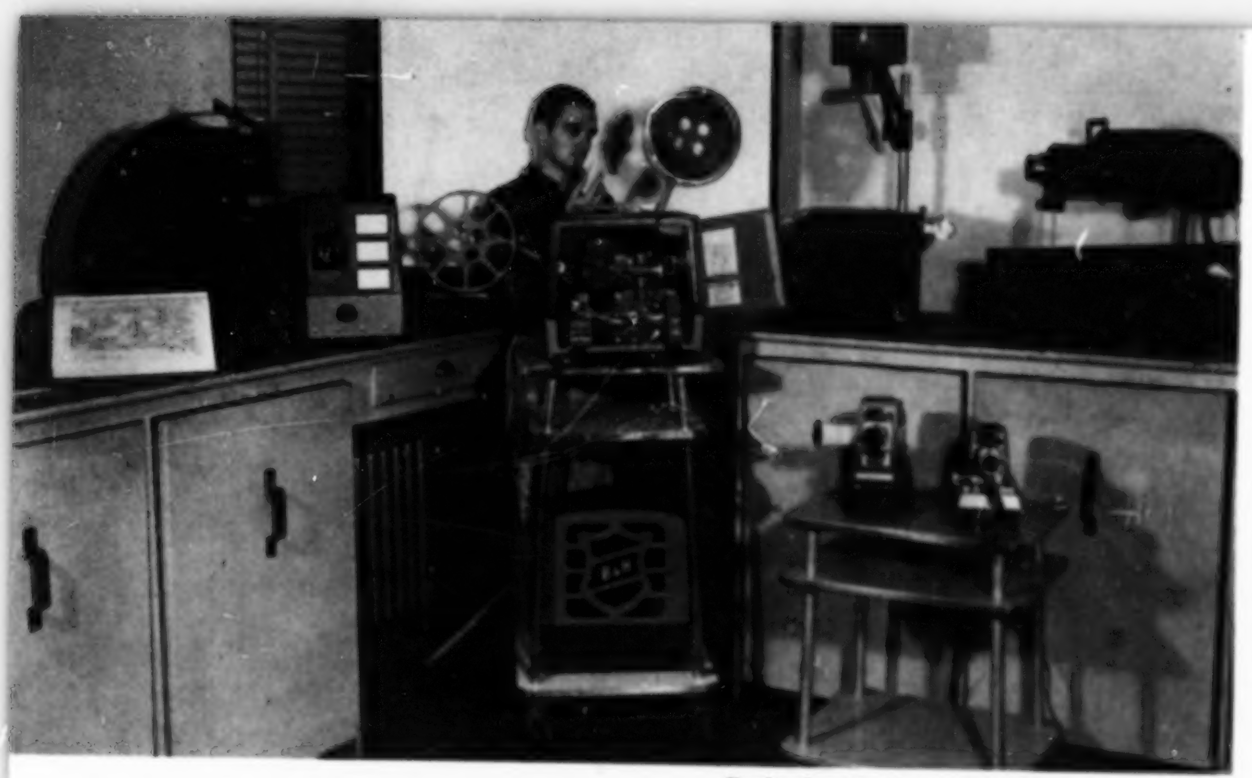
*A-V Laboratory Assistants*

James C. Burrus
George G. Killough, Jr.
William A. Myers
Walter F. Williams

## Audio-Visual Materials

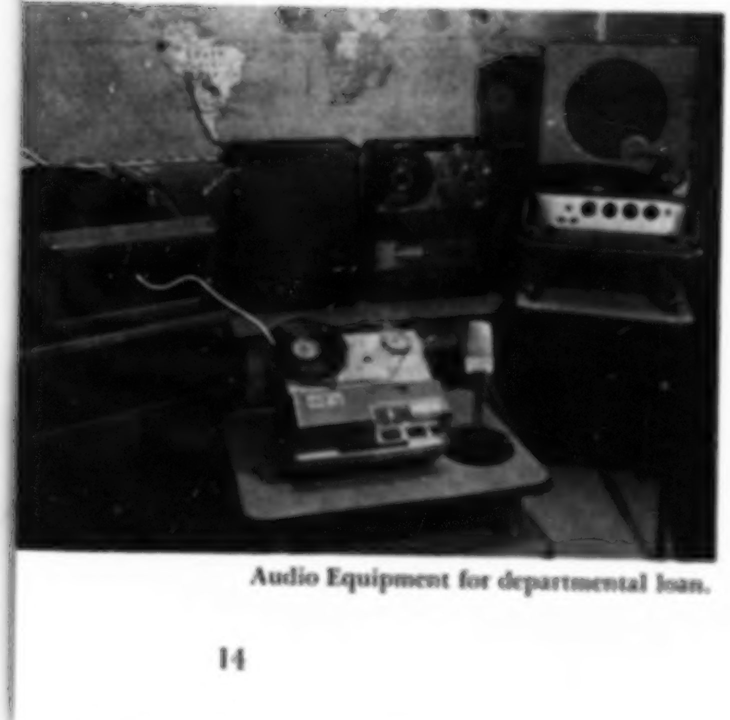
Film booking services and reference materials covering every available source of commercially prepared 16mm motion picture films, magnetic tape recordings, 35mm filmstrips, slides, and specialized equipment are available at the Audio-Visual Bureau in 111 Abernethy Hall. Recordings of literary items on long play records and magnetic tape are being added for classroom instruction or for special assignments. 35mm filmstrips and 2"x2" slide series in special areas can be secured upon request of faculty members. Tentative plans are underway for the development of a collection of college level audio-visual materials evaluated by faculty members for out-of-class student viewing and listening.

Audio-Visual
Bureau



Projection Equipment for departmental loan.

## Audio-Visual Equipment Services



Audio Equipment for departmental loan.

Any type of modern audio-visual equipment such as 16mm motion picture projectors, filmstrip and automatic slide projectors, tape recorders, record and transcription players, overhead and opaque projectors may be rented from the Audio-Visual Bureau for use by academic departments and adult education groups on the campus.

# Film Utilization and Distribution

The Audio-Visual Bureau's collection of 16mm educational motion picture films covers a variety of interest areas and educational concepts for college teaching and adult education. Workshops and conferences on film utilization are available on request.

*Films are stored in a large air-conditioned vault in order to preserve their projection quality and reduce damage.*

*Film repairs and distribution* are handled by an experienced staff of skilled technicians with more than a decade of experience in this operation. Magnetic tapes, projection lamps, and minor accessories are distributed at the Audio-Visual Bureau for the operation of essential items of audio-visual equipment owned by departments on campus.

## Film and Equipment Maintenance

Minor repairs and mechanical maintenance of audio-visual equipment are available through the Audio-Visual Bureau.

Kenneth M. McIntyre, Audio-Visual Director, and Edgar Alden, Associate Professor of Music, discuss plans for audio-visual equipment and technical facilities from the blueprints for the addition to the Music Building.

## Counseling on Audio-Visual Problems

Counseling on audio-visual problems is one of the Audio-Visual Bureau's basic functions and the following kinds of consultant services are available: Selection of audio-visual materials for preview; discussion of audio-visual materials and techniques for faculty classes and conferences; faculty seminars on the use of audio-visual materials and equipment; survey and evaluation of local classroom facilities and recommendations for improving physical facilities for better use of audio-visual materials; counseling on specific problems involving design of audio-visual facilities in new buildings, and the selection of new audio-visual equipment for classroom instruction or specialized needs; assistance with research studies involving the use of audio-visual materials and equipment, such as the development of teaching machines, and techniques for using audio-visual materials on television, are provided on request. The availability of selected audio-visual indexes, guides, bibliographies of research abstracts on instructional methods in the audio-visual field are an asset to individual faculty members who have problems regarding instructional materials. All members of the University faculty and staff are urged to continue to call on the Audio-Visual Bureau's Director and Staff for assistance at any time.

Telephone 8-493 or 8-494
111 Abernethy Hall

LUX
LIBERTAS

# APPENDIX D

## PROCEDURES

......................................................................

1. The Measurement Instrument. An evaluation instrument was constructed to measure the variables in the study. The instrument was the Faculty Opinion Questionnaire and Instructional Materials Survey (Appendix D). Its purpose was to measure the frequency of faculty use of audiovisual materials, deterrents to the use of audiovisual materials, attitude toward audiovisual materials, familiarity with audiovisual materials, and utilization of audiovisual materials.

(a) The frequency-of-use scale was a seven item scale with a graded response of zero to three for each item, and was a measure of the number of times a faculty member used audiovisual materials.

(b) The deterrent scale was a seven item scale with a graded response of zero to two for each item. It was a measure of the physical obstacles (funds, lack of suitable materials, etc.) and the relative strength of the obstacles.

(c) The familiarity scale was a one-item scale with a graded response of zero to two used to determine how familiar the faculty was with commercially produced audiovisual materials.

(d) The attitude scale was a 27-item Likert type of scale, with a corrected split-half reliability of .86 which was determined by data gathered in a pilot test given prior to the final construction of the instrument. The attitude scale contained 14 positive questions and 6 negative questions. There were also seven foils, not counted in the respondents' total attitude score. Six of these seven foils were concerned with television. A correlation between the television and other audiovisual questions in the pilot test revealed a slight positive correlation of .12, and because of this they were not included in the total attitude score.

(e) The utilization scale was a six item scale with a range of zero to two in each item, and was a measure of the quality of use of audiovisual materials.

2. The Pilot Test. Sixty respondents at another institution of higher learning within the state were used to test the questionnaire in the Fall of 1959. The data obtained from this pilot study were used to determine the

reliability of the various scales. Written comments and opinions were also received from the respondents and these served as a check on the face validity of the scales. The validity was also checked by conferences with consultants. In addition, the validity of the utilization scale was checked by curricular validity which was essentially a content analysis of current audiovisual textbooks to determine the steps which the authors considered essential to proper utilization.

3. The Pretest. The pretest was the initial administration of the questionnaire to the experimental and control groups. It was given to the experimental group in the Spring of 1960, and to the control group in the early fall of 1960. The delay in administering the pretest to the control group was caused by difficulties in the primary control group which precluded the administration of the questionnaire to that group. The alternate control group was used, but arrangements could not be made to administer the questionnaire to them until the fall of 1960.

4. The Post-Test. The post-test was the second administration of the same questionnaire to the experimental and control groups. It was given to both groups in the Spring of 1961.

5. Method of Comparison. Only those responses from subjects who filled out the questionnaire twice, pretest and post-test, were used in the analysis. This matching procedure caused a loss in the number of respondents and this was called the attrition rate. The pretest was sent out to 585 full-time and part-time faculty members in the experimental group and 365 returned the questionnaire, but before the post-test could be administered, 94 respondents were on leave or had left for other reasons. The post-test was administered to the remaining 271 respondents and a 70 per cent return was secured. Some of the questionnaires were not filled out completely, resulting in data based on 174 responses. The same procedure was used with the control group and the data with that group were based on 59 responses.

The t-test[1] was used to determine whether the difference in scores between the pretest and post-test was significant. This procedure indicated whether or not the difference in scores between the two tests was due to chance fluctuations or a real difference which might be attributed to the stimuli. If the statistic has a high value, the probability that the pretest and post-test difference can be attributed to chance is small. Probabilities at the .05 level or more are generally required before referring to any difference in scores as statistically significant. The .05 level is interpreted to mean that the value of the statistic associated with this level of significance could occur by chance only five times out of 100 times. The statistic does not indicate the cause of any difference, but only that chance is or is not a negligible factor. The .10 level is occasionally used in this report so that no factors which might be valuable would be overlooked. In the case of the .10 level, it is likely that a value of the statistic of this size would occur by chance one time in ten.

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[1] Helen M. Walker and Joseph Lev, Statistical Inference. New York: Henry Holt, 1953.

The matching statistical procedures were standard throughout the questionnaire except for the frequency-of-use scale. This particular scale not only required that the respondent be the same in the pretest and post-test, but also required that he must have taught the same level of courses at each time the test was given. A faculty member who took the pretest when he taught one lower course (Freshman or Sophomore), two upper courses (Junior or Senior) and one graduate course would have to teach the same level and number of courses when he took the post-test. If this was not the case, then his scores on the frequency-of-use scale were not counted. This particular matching procedure caused a very high attrition rate which precluded a final comparison of the control and experimental groups on this particular scale. It also prevented a comparison between the pilot courses and the remainder of the university on this scale.

The chi square[1] statistic was computed for various parts of the pretest given to the experimental group to determine whether such factors as attitude, faculty rank, teaching experience, utilization and frequency-of-use were associated significantly. There were 54 chi squares computed, but not all of them were significant at the .05 level.

6. The Interview-Questionnaire. (Designed and administered by the Research Associate) The Interview Questionnaire was designed to measure the effectiveness of the audiovisual internship on the graduate assistants who participated in the Summer Workshop and who spent a minimum of two semesters as assistants to the pilot course teachers. In order to assess the results of the procedures used for improving the communication skills of these graduate students, an interview questionnaire was administered following the completion of the pilot courses. The results of the questionnaire administered to the graduate assistants were compared with responses to the questionnaire from thirteen public school teachers who had taken an audiovisual methods course at the graduate level at the University of North Carolina during the same two year period in which the graduate assistants were participating in the project. Analysis of the data indicated that the graduate assistants had a superior knowledge of the audiovisual materials available in their academic fields with a sound knowledge of utilization and production techniques. The thirteen public school teachers questioned were engaged in full time teaching, but less than fifteen per cent (15%) of the respondents were able to identify three specific types of audiovisual materials available to them in their teaching fields, or to name standard audiovisual references. This analysis indicates the value of training in graphic communication skills combined with graduate study in an academic subject area.

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[1] Helen M. Walker and Joseph Lev, Statistical Inference. New York: Henry Holt, 1953.

Among the questions asked in the Interview-Questionnaire were:

(1) What is your teaching experience?

(2) Have you had any courses in methods in teaching?

(3) When was this course (s) taken?

(4) For which grade levels was this course designed?

(5) Was this course (s) a specific methods course such as Social Studies?

(6) Did the course contain any information on audiovisual materials?

(7) Have you had an audiovisual materials and methods course?

(8) Describe the type of course it was. (a) mostly production (b) mostly utilization (c) other

(9) Did you find this course helpful?

(10) If you were surveying your teaching field for audiovisual materials what are some of the standard reference sources you would use?

(11) Are you familiar with audiovisual materials in your field? (a) Name some films in your field (b) Name some filmstrips in your field (c) Name some recordings in your field.

(12) Name any production processes with which you are familiar.

(13) Can you evaluate briefly your audiovisual preparation for teaching, giving strengths and weaknesses.

(14) Can you tell me what function you feel audiovisual materials should have in your present or future teaching?

# FACULTY OPINION QUESTIONNAIRE
# and
# INSTRUCTIONAL MATERIALS SURVEY

FACULTY RANK ______________________ DEPARTMENT ______________________

TOTAL NUMBER OF YEARS OF COLLEGE TEACHING EXPERIENCE ______________

HIGHEST DEGREE EARNED ______ MAJOR FIELD ______________ DATE AWARDED ________

SUBJECTS TAUGHT THIS FALL (1959-60) SEMESTER (list each section of a course separately)

| Course Number | Section Number | Brief Title | Credit Hours |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**NOTE: Emphasis is placed upon the fact that this is a group study and no attempt will be made to identify individual professors. Because of the nature of the investigation, information has been asked about specific courses; however, this will definitely NOT be used to identify responses. The number on the questionnaire is for control purposes only.**

University of North Carolina, Chapel Hill
Bureau of Audio-Visual Education (AVE-60)

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**Please use one *block* for each course you teach this semester, and be sure to put the *course number* in the blocks used. (For example if you teach one course use only block A, if you teach three courses use blocks A, B, C, etc. Treat each class section the same as a separate course.)**

### A

**Approximately how often do you use the following teaching materials in your course number ________**

| | Once a week | Once a month | A few times a year | Not at All |
|---|---|---|---|---|
| Motion Pictures | ☐ | ☐ | ☐ | ☐ |
| Filmstrips | ☐ | ☐ | ☐ | ☐ |
| Slides | ☐ | ☐ | ☐ | ☐ |
| Charts, maps, graphs | ☐ | ☐ | ☐ | ☐ |
| Receive TV in class | ☐ | ☐ | ☐ | ☐ |
| Records/tapes | ☐ | ☐ | ☐ | ☐ |
| OTHER (specify) | | | | |
| ________ | ☐ | ☐ | ☐ | ☐ |

### B

**Approximately how often do you use the following teaching materials in your course number ________**

| | Once a week | Once a month | A few times a year | Not at All |
|---|---|---|---|---|
| Motion Pictures | ☐ | ☐ | ☐ | ☐ |
| Filmstrips | ☐ | ☐ | ☐ | ☐ |
| Slides | ☐ | ☐ | ☐ | ☐ |
| Charts, maps, graphs | ☐ | ☐ | ☐ | ☐ |
| Receive TV in class | ☐ | ☐ | ☐ | ☐ |
| Records/tapes | ☐ | ☐ | ☐ | ☐ |
| OTHER (specify) | | | | |
| ________ | ☐ | ☐ | ☐ | ☐ |

### C

**Approximately how often do you use the following teaching materials in your course number ________**

| | Once a week | Once a month | A few times a year | Not at All |
|---|---|---|---|---|
| Motion Pictures | ☐ | ☐ | ☐ | ☐ |
| Filmstrips | ☐ | ☐ | ☐ | ☐ |
| Slides | ☐ | ☐ | ☐ | ☐ |
| Charts, maps, graphs | ☐ | ☐ | ☐ | ☐ |
| Receive TV in class | ☐ | ☐ | ☐ | ☐ |
| Records/tapes | ☐ | ☐ | ☐ | ☐ |
| OTHER (specify) | | | | |
| ________ | ☐ | ☐ | ☐ | ☐ |

### D

**Approximately how often do you use the following teaching materials in your course number ________**

| | Once a week | Once a month | A few times a year | Not at All |
|---|---|---|---|---|
| Motion Pictures | ☐ | ☐ | ☐ | ☐ |
| Filmstrips | ☐ | ☐ | ☐ | ☐ |
| Slides | ☐ | ☐ | ☐ | ☐ |
| Charts, maps, graphs | ☐ | ☐ | ☐ | ☐ |
| Receive TV in class | ☐ | ☐ | ☐ | ☐ |
| Records/tapes | ☐ | ☐ | ☐ | ☐ |
| OTHER (specify) | | | | |
| ________ | ☐ | ☐ | ☐ | ☐ |

**What do you feel are the major obstacles to utilizing motion pictures, filmstrips, graphs, charts and other such teaching materials in your instruction? (For each statement check the "2" if *you* consider it a major deterrent, check "1" if it is a *moderate* deterrent, and a "0" if it is a deterrent of little or no importance. Please check only one category for each statement.)**

| | Major Deterrent<br>2 | Moderate Deterrent<br>1 | Minor or No Deterrent<br>0 |
|---|---|---|---|
| 1. Suitable materials not available for college use. | ( ) | ( ) | ( ) |
| 2. Lack of information on college materials. | ( ) | ( ) | ( ) |
| 3. Limited departmental funds for purchase or rental of materials. | ( ) | ( ) | ( ) |
| 4. Films, equipment or operators not available when needed. | ( ) | ( ) | ( ) |
| 5. There is not enough time available to locate good materials. | ( ) | ( ) | ( ) |
| 6. Lack of adequate facilities for showing materials. | ( ) | ( ) | ( ) |
| 7. Lack of technical assistance to aid in preparation of materials. | ( ) | ( ) | ( ) |
| 8. Other deterrents or obstacles: Please specify | ( ) | ( ) | ( ) |
| ________________________________ | ( ) | ( ) | ( ) |
| ________________________________ | ( ) | ( ) | ( ) |

**Have you had occasion to become familiar with the commercially produced teaching materials in your field such as motion pictures, filmstrips, records and slides?**

**Yes, quite familiar** ☐ **Somewhat familiar** ☐ **Not familiar** ☐

**In the following series of statements we are anxious to find out exactly what you think about a number of current instructional problems. Some of the questions may seem redundant or unimportant to you but they are included to get a real survey of college teachers' opinions. Please do not put down what you think you ought to feel, but how you actually feel about the statement. Do not be especially concerned as to whether your opinions are consistent. For each statement place a check mark under the response which most closely approximates your opinion of the statement. Please treat each statement independently.**

---

| | Strongly Agree | Agree | Uncertain | Disagree | Strongly Disagree |
|---|---|---|---|---|---|
| 1. Motion pictures can frequently aid me in my instruction. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 2. College teachers should be familiar with the filmstrips in their teaching area. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 3. Slides, motion pictures and other audio-visual aids can be extremely effective in large classes of 75 or more students. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 4. It is educationally sound to adapt films, slides and other audio-visual aids for widespread use in college teaching in order to meet the problem of increasing enrollment. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 5. I do not understand all the implications that television in college teaching has for me. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 6. College teachers who want to use motion pictures, filmstrips, slides and other college level materials of this type should have the personnel, fiscal support, and technical facilities readily available. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 7. I would be willing to teach on television if I could teach from a television studio. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 8. Properly handled, motion pictures can enable the college teacher to free himself of the burdensome task of conveying information and devote more time to individual students and research. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 9. I would be willing to teach over open circuit (broadcast) television. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 10. Some of my colleagues have had excellent results in using slides. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 11. It takes too much time to locate good films. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 12. Motion pictures, charts, graphs and other audio-visual materials may be fine for other teachers, but personally I have little use for them. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 13. I believe audio-visual materials make a substantial contribution to the education of my students. | ( ) | ( ) | ( ) | ( ) | ( ) |

|  | Strongly Agree | Agree | Uncertain | Disagree | Strongly Disagree |
|---|---|---|---|---|---|
| 14. Slides take up too much class time, and do not leave time to cover the text material. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 15. *Filmstrips* are useful in good college teaching. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 16. I would like to produce slides for use in my class if the facilities and finances were readily available. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 17. When properly used, charts, maps, and graphs save a great deal of teaching time. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 18. I would be willing to teach over closed circuit television | ( ) | ( ) | ( ) | ( ) | ( ) |
| 19. Most audio-visual materials that have come to my attention are unsuited for college use. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 20. Slides can be very helpful in most college subjects. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 21. The effort in obtaining charts is certainly worth the values derived from their use. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 22. The values to be gained from most recordings (tape or disc) do not warrant their use in college teaching. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 23. Teachers should receive royalties from *filmed* or *taped* television programs of which they are the author just as they now receive royalties from books. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 24. Slides, motion pictures, and other audio-visual aids can be extremely effective in small classes of less than 25 students. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 25. I would be willing to teach on television if it meant only the addition of inconspicious equipment to my classroom. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 26. I seldom can get a film when I need it. | ( ) | ( ) | ( ) | ( ) | ( ) |
| 27. If given sufficient personnel and financial assistance, I would like to supervise the preparation and evaluation of audio-visual materials for my classes. | ( ) | ( ) | ( ) | ( ) | ( ) |

Since physical barriers tend to handicap good use of audio-visual materials we are interested in determining some current practices which might be aided by improved conditions. For each of the following statements place a check mark in the space under the word which most clearly describes your actual practice.

---

| | Usually | Seldom | Never |
|---|---|---|---|
| 1. Select and evaluate materials specifically related to the content of the course. | ( ) | ( ) | ( ) |
| 2. Preview materials before use. | ( ) | ( ) | ( ) |
| 3. Introduce the materials to the class. | ( ) | ( ) | ( ) |
| 4. Provide proper facilities for projection and showing. | ( ) | ( ) | ( ) |
| 5. Discuss the materials with the class after or while using them. | ( ) | ( ) | ( ) |
| 6. Have individual members of the class follow up any activities suggested by the materials or by a discussion of the materials. | ( ) | ( ) | ( ) |

---

What additional remarks concerning your experience with audio-visual materials do you consider pertinent? [For example, what materials (slides, films, recordings, etc.) would you like to have available for evaluation; what materials would you like to have produced under your direction; what suggestions could you make concerning the production of teaching materials for your classroom, etc.] If additional space is needed use back of the questionnaire.

THE UNIVERSITY OF NORTH CAROLINA
CHAPEL HILL

OFFICE OF THE DEAN OF THE FACULTY

February 17, 1960

MEMORANDUM TO: Members of the Faculty

ENCLOSURE: Faculty Opinion Questionnaire and Instructional Materials Survey

Attached is a Faculty Opinion Questionnaire and Instructional Materials Survey to which we are asking your response. This is part of a research project on the use of special instructional materials and media, supported by a grant to the University's Bureau of Audio-Visual Education through the National Defense Education Act.

I hope that you will participate in the study by filling out the questionnaire at your earliest convenience. The study will be concerned with techniques for developing and improving audio-visual materials and services for instruction at the University, a need which has been indicated by faculty members in many areas.

Emphasis is placed upon the fact that this is a group study and no attempt will be made to identify individuals. The questionnaire is designed to be statistically analyzed on an electronic computer. Because of the nature of the investigation information has been asked about specific courses; however, this will definitely not be used to identify responses.

I realize that you have many demands on your time and that filling out questionnaires may well be considered an additional burden. On the other hand, I feel that you can render a valuable service by participating in this study, and also receive some benefits in terms of improved instructional materials and services.

Will you please complete the attached forms and return them in the self-addressed envelope to the Bureau of Audio-Visual Education, 111 Abernethy Hall, not later than Friday, February 26, 1960.

Thank you for your cooperation.

Sincerely yours,

James L. Godfrey

James L. Godfrey

# APPENDIX E

## COMPARATIVE DIFFERENCES IN PILOT COURSE DEPARTMENTS AND OTHERS

……

The five areas in which the stimuli, in the form of pilot courses, were applied were English, history, law, physics, and philosophy. One teacher in each of these departments was supported with a graduate assistant and ample funds to develop materials for his courses. It was anticipated that a teacher who made outstanding use of audiovisual materials within a department would stimulate other teachers in the department to emulate his actions.

A comparison of the results shown on the questionnaire by these five departments with the remaining 26 departments in the university revealed that although the pilot departments kept pace with the remainder of the university, they did not exceed them in any of the areas investigated with the exception of familiarity. That increase was significant at the five per cent level in the latter area.

An explanation of this might be found in the subject-matter areas. The pretest showed that these were difficult areas, but it was decided to work with them instead of with areas which might have used the materials more readily.

It would seem that even though the areas did have financial and personnel assistance, it was concentrated on one teacher in rather large departments. This, coupled with the customary individual use of audiovisual materials by these departments, might account for the seemingly small measure of success in this particular part of the study as far as increased use is concerned.

The pilot departments increased significantly in familiarity with materials which indicates they knew more about audiovisual materials even though they did not increase significantly on the other aspects of the study such as attitude and utilization.

A conclusion which may be drawn from this section is that an academic department is not an entity in itself. The pilot course teachers made excellent use of the audiovisual materials supplied to them. Their colleagues did not increase their actual usage perhaps because they were not supplied with as much material or assistance.

In some instances, there was a certain amount of professional jealousy indicated on the part of junior faculty members of the pilot course departments. This was perhaps an instinctive reaction stemming from individuals who may have made broader use of audiovisual materials than the senior faculty members selected to teach the pilot course. The prestige factor involved in seniority was given priority, however, in selecting pilot course teachers. The status of a professorship has greater impact on departmental attitudes than the single factor of utilization of materials.

# APPENDIX F

## COMPARATIVE DIFFERENCES IN CONTROL AND EXPERIMENTAL GROUPS

The control group was the faculty of another institution of higher learning in the state. Although no control group was called for in the original proposal, it was decided that such a group would add to the reliability of the study. It was difficult to choose another institution where all factors would be equal, but Figure 7-1 shows that the groups were essentially equated in three of four factors. The utilization scale was the only one which showed an initial inequality of the control and experimental groups.

The other factors, deterrents, familiarity, attitude, showed no significant difference in usage between the control and experimental groups. The attitude might appear to show a significant difference in Figure 7-1, but its range covered 80 points. Thus, 3.25 points out of 80 was not significant. The utilization scale had a range of only 12 points and a difference of 3.08 out of 12 was significant whereas a difference of 3.25 out of 80 was not.

FIGURE 7-1. MEAN DIFFERENCE IN PRETEST SCORES OF CONTROL AND EXPERIMENTAL GROUPS

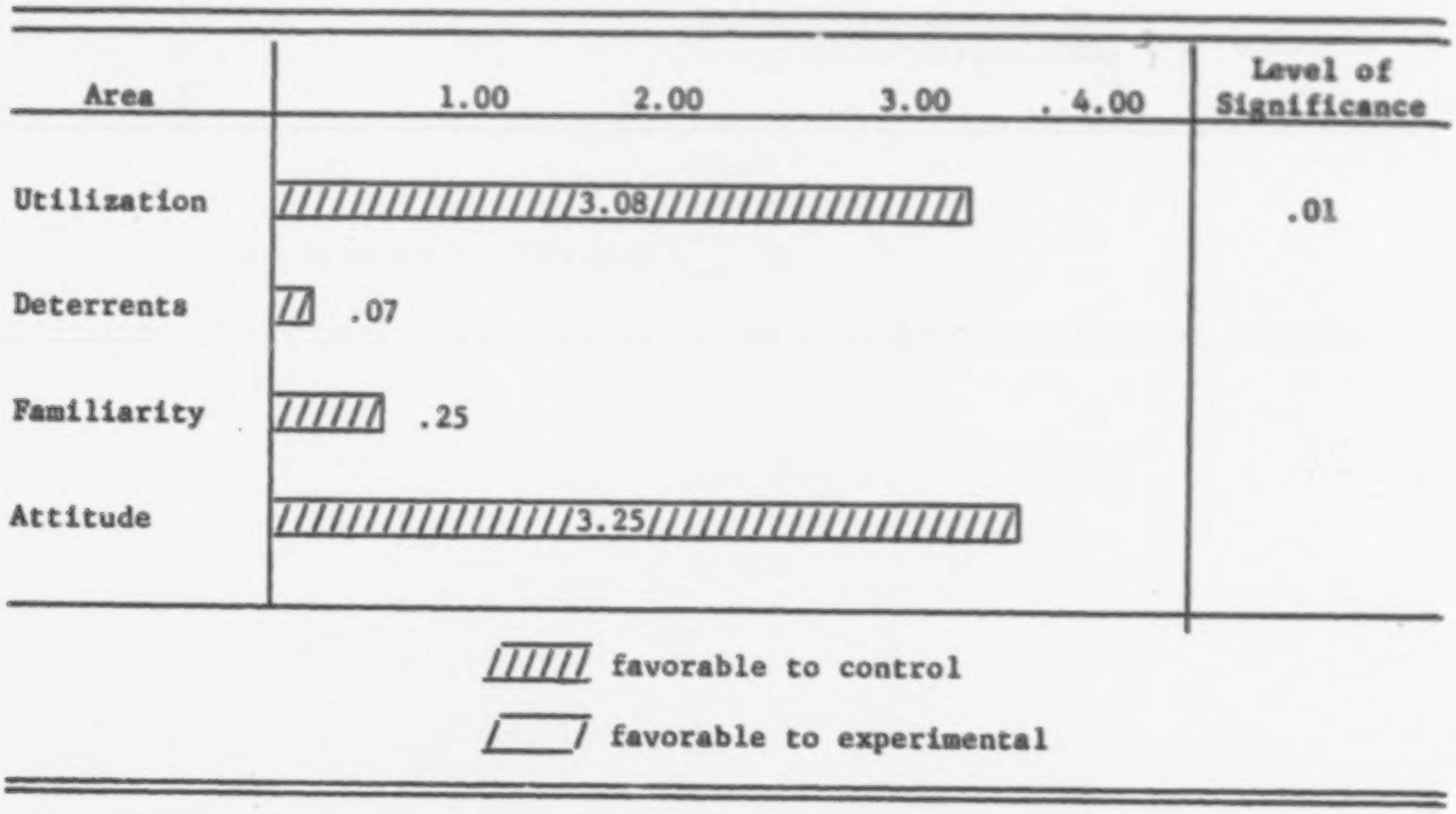


Figure 7-2 shows the mean difference between the experimental and control groups for the post-test. Once again the only significant differences was in utilization and this difference was maintained. The rest of the items showed no significant differences.

FIGURE 7-2. MEAN DIFFERENCE IN POST-TEST SCORES OF CONTROL AND EXPERIMENTAL GROUPS

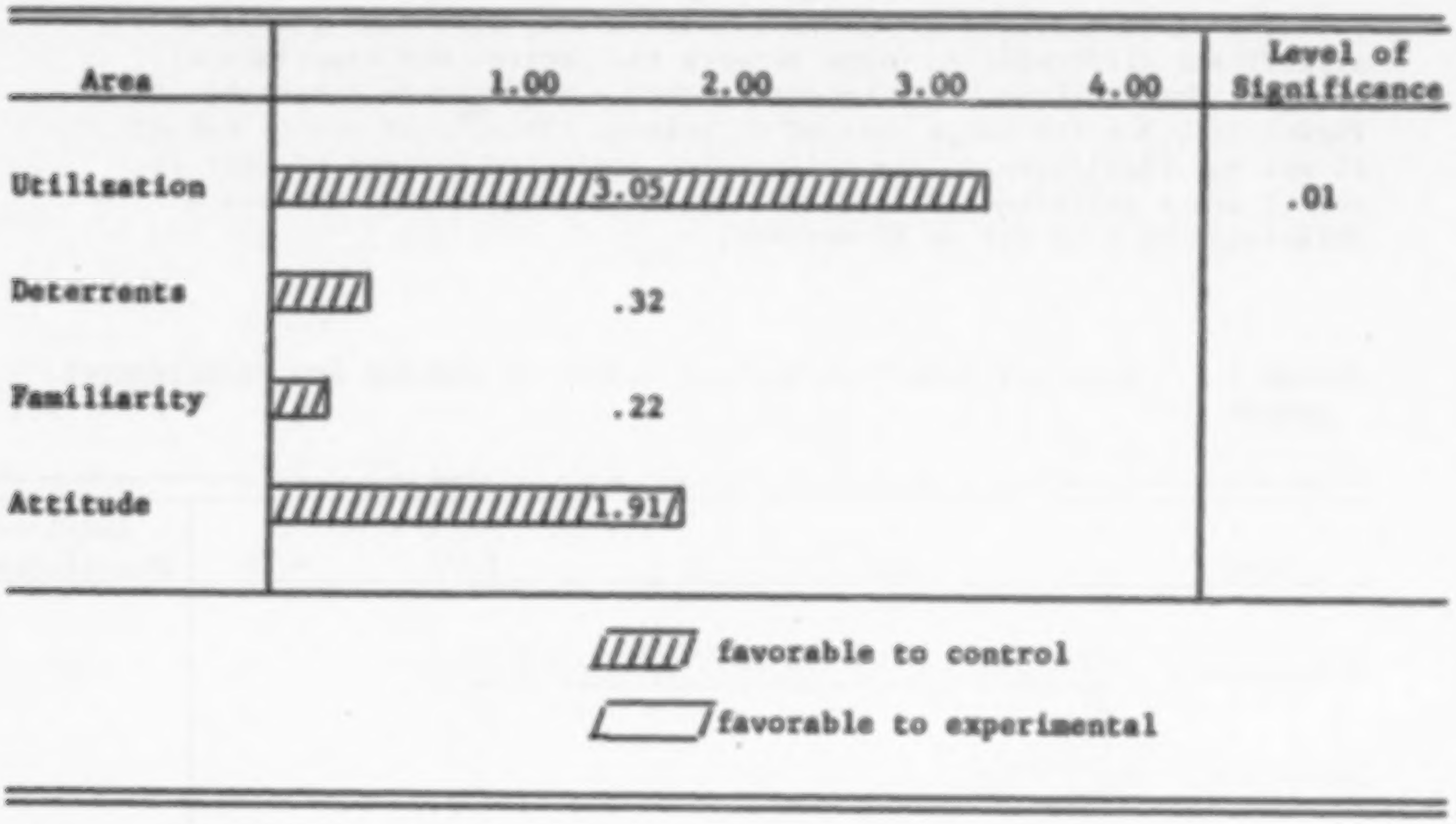


Figure 7-3 shows the mean difference in the control group between the pretest and post-test. It should be noted that the scale has changed from a one to four range which was on the previous tables to a zero to .25 range on Figure 7-3. There were very minor differences between the two tests and the attitude scale regressed slightly. However, there were no significant differences in either direction with the control group. No stimulus was applied to this group and all four areas remained constant.

FIGURE 7-3. MEAN DIFFERENCE IN PRETEST AND POST-TEST SCORES OF CONTROL GROUP

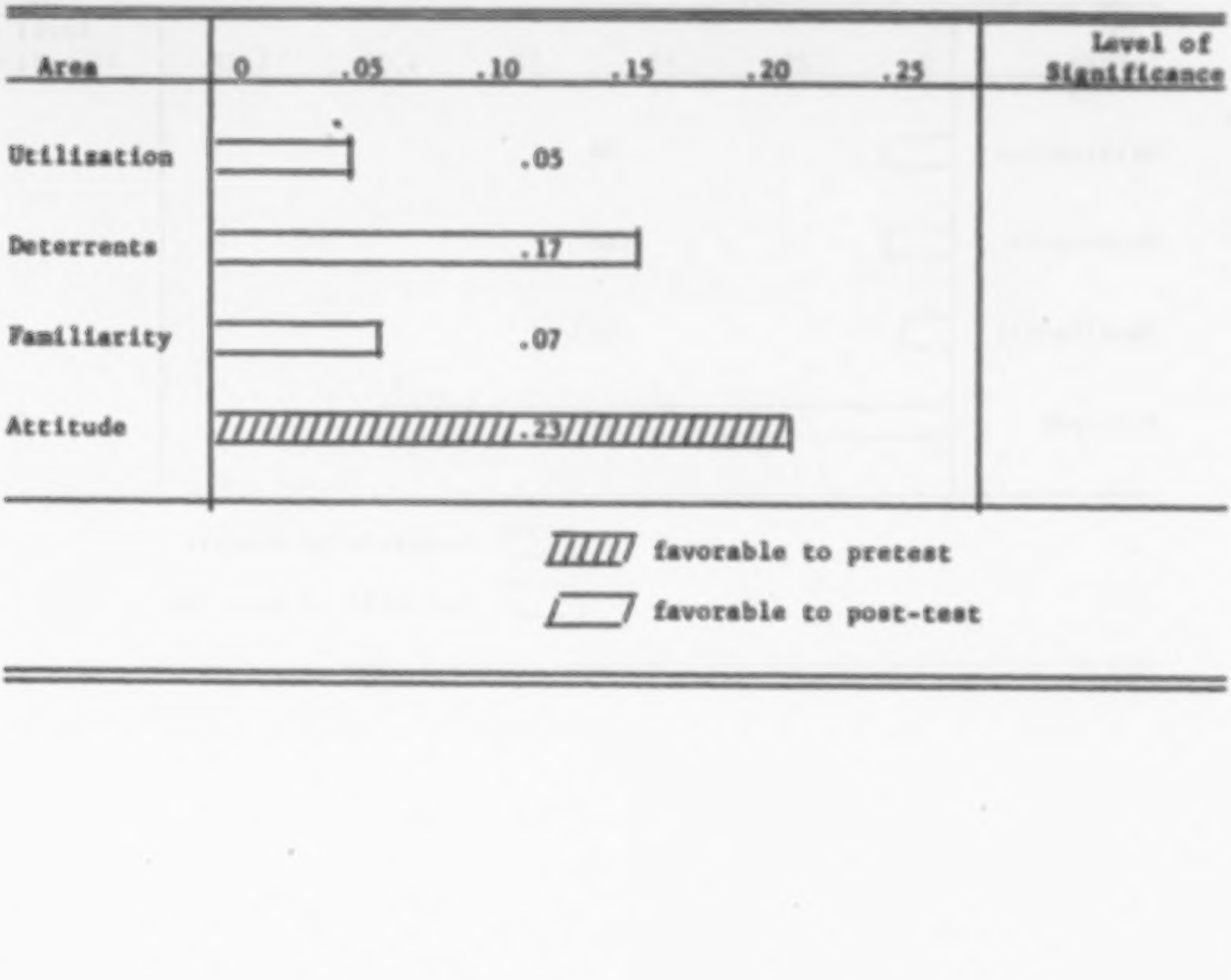
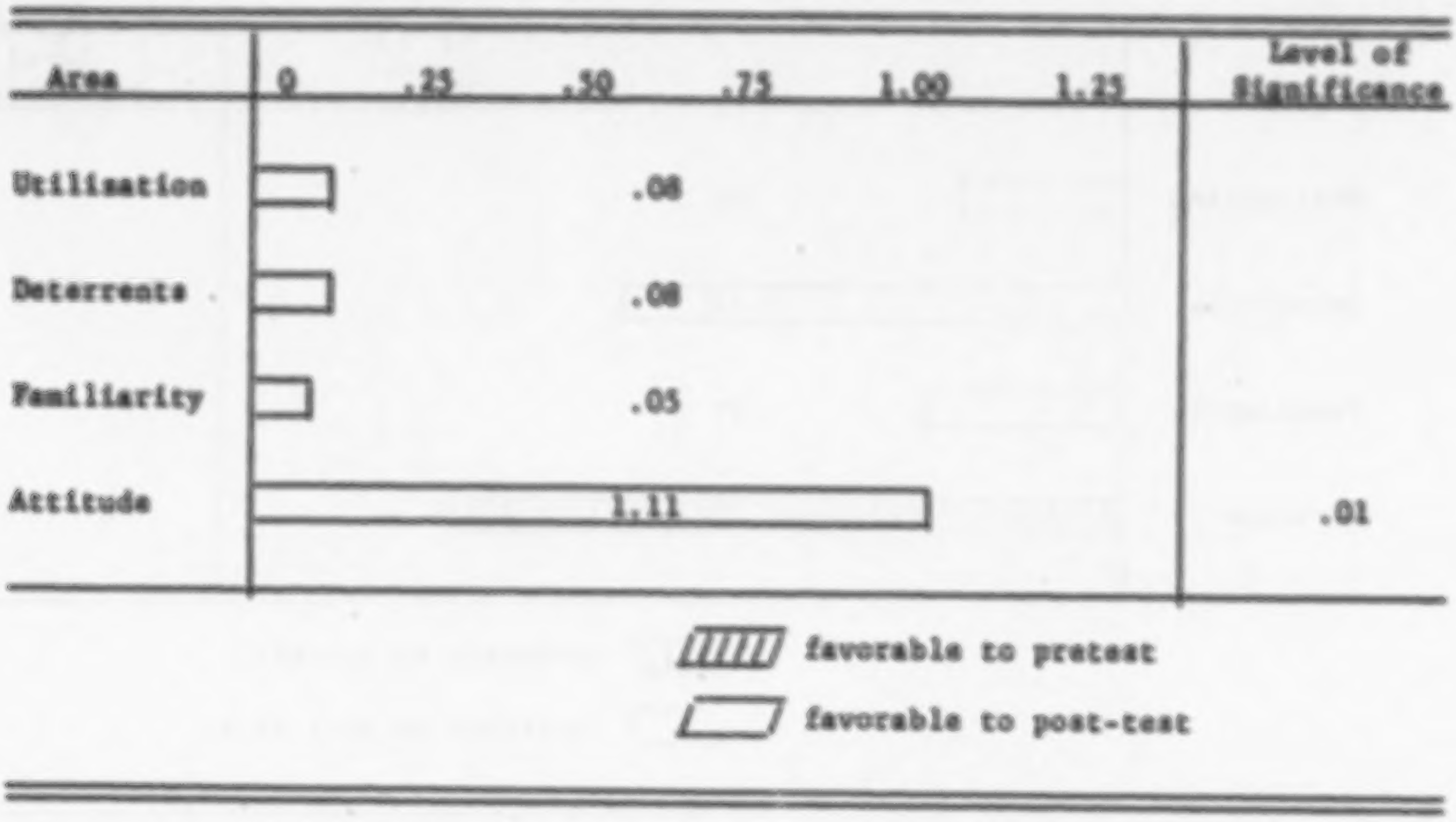


Figure 7-4 has a difference scale from the previous one. Its scale is from zero to 1.25. All of the shifts in this table were positive, but all of them were very minor and insignificant with the exception of the attitude area. The difference in attitude between the pretest and post-test was significant at the .01 per cent level of confidence. This tends to show that the stimulus used was successful in improving faculty-wide attitude. The control group as shown in Figure 7-3 regressed slightly in attitude.

FIGURE 7-4. MEAN DIFFERENCE IN PRETEST AND POST-TEST SCORES OF EXPERIMENTAL GROUP



# APPENDIX G

## AUDIOVISUAL MATERIALS AND CLOSED-CIRCUIT TELEVISION IN THE SCHOOL OF DENTISTRY

..........................................................................................

The five pilot courses started at the beginning of the fall semester of 1960 and continued for two semesters. Prior to the summer workshop it was decided to include a course in the School of Dentistry in addition to the five already scheduled for several important reasons. The pilot course in the School of Dentistry lasted only one quarter. This provided the investigators with an opportunity to evaluate the course, experiment with statistical procedures and work out a format for the final report before the end of the study. Thus all statistical and computer programming methods were tested on the dental course before the final data came in from the university and the control group. Another reason for the use of the dental course was closed-circuit television.

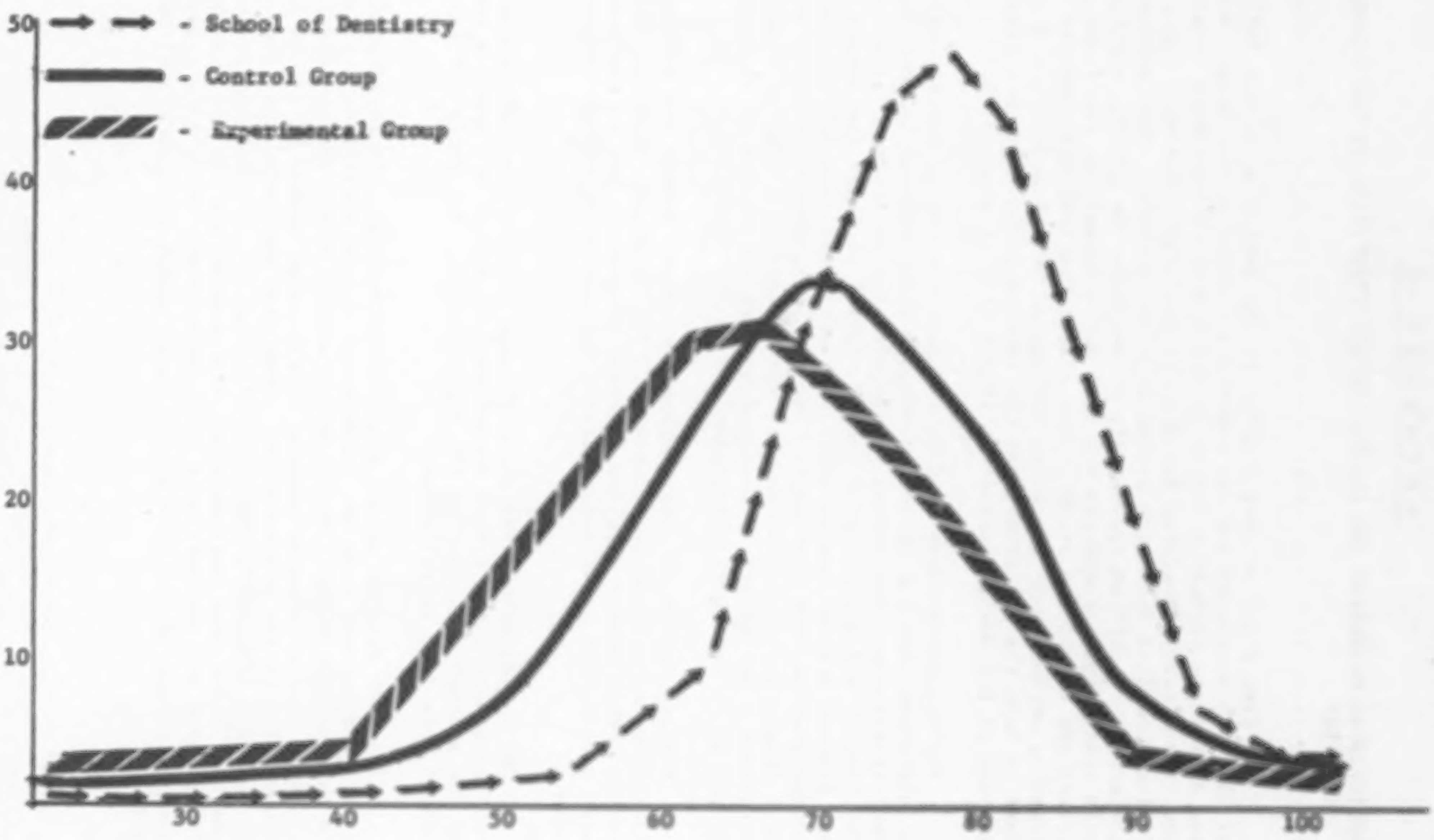
The various methods used to increase the use of audiovisual materials in classroom teaching in the university pilot courses had not been tried over television. The dental course was used to study these procedures. The teacher and a third-year dental student attended the summer workshop and planned for the use of materials over television and in class. A unique problem with this course was that six, four-hour class sessions were taught on television and six were taught in a regular classroom situation. The materials designed for the course had to be versatile enough to be used over television and in the classroom.

Transparencies for the overhead projector seemed the answer to the classroom and television situations. In the former case they were used in the normal manner with the overhead projector; and in the latter they were backlighted by an x-ray viewing box and picked up by the television camera.

The Dental School was significantly ahead of the university and the control group in every area investigated. Figure 8-1 shows a comparison of the attitude achieved by the three groups. The Dental School maintained this lead in all tests.

The main outcome of the pilot study was that the deterrents to the use of audiovisual aids can be overcome in the professional as well as in the academic areas. The dental students preferred the televised class to their regular classes because of the large number of visual aids and the clarity of the presentation. They also indicated that they were able to do their laboratory work more efficiently. In that quarter approximately 33 per cent more material was covered than in the previous quarters. The faculty and students were very enthusiastic about this television course and attributed this to the large number of audiovisual materials used.

FIGURE 8-1. COMPARISON OF UNIVERSITY OF NORTH CAROLINA SCHOOL OF DENTISTRY AND CONTROL GROUP ON ATTITUDE SCORES WITH EXPERIMENTAL GROUP



## PILOT COURSE TEACHER'S REPORT

December 16, 1960

Mr. Kenneth M. McIntyre
Director, Bureau of Audio-Visual Education
Abernethy Hall
University of North Carolina
Chapel Hill, North Carolina

Dear Mr. McIntyre:

I want to thank you for your support and cooperation in preparing visual aids for our course, Endodontic 160. Additionally, I wish to indicate benefits derived that would have been impossible without this support.

Visual aids are tremendously important in teaching endodontics, where communication with students regarding operations within a remote area such as the pulp cavity of the tooth is often difficult. Detail and sequence must firmly be implanted in the student's mind before he is allowed to treat patients in our endodontic clinic.

The type of illustration must be versatile. They should be of such a nature as to be used in the classroom or in connection with the closed-circuit television program. These were the types of illustrations provided. In addition, many are of overlay or built up type that enabled the teacher to describe an operation as it is done. This is done with fewer words and in a shorter length of time. Handouts for students may be made from these illustrations in order that much of the note-taking be eliminated.

Six television shows were given utilizing a patient in demonstration of endodontic technics. This eliminated all classroom lecturing except for brief reviews at times prior to or following the showing of a movie in the classroom. The illustrations used on television were used for these reviews on the overhead projector. The overhead projector eliminates blackboard work where, in many instances, one finds himself lecturing into the blackboard rather than to the class. Time is saved as well.

Students applauded the use of television, the illustrations, and the handouts that were made from the illustrations. This was expressed to me, members of the faculty, as well as to our administration.

Laboratory routine had a smoother course than in the past when present methods of teaching were not used. Next year the use of closed-circuit television will be broadened in order that the course be taught completely by this medium.

The production of illustrations has been a problem in the past. It is most difficult to communicate with a medical illustrator during the production of a illustration. More time and expense is consumed in this manner. In almost every class of dental students there is someone with reasonable proficiency in art work. The services of a senior dental student were employed for the production of illustrations for this course. He has just completed the course and was of value as he had a clear understanding of the problems of communication particular to the course as well as some knowledge of the subject. As a result, little time on the part of the teacher was necessary, aside from giving directions. The employment of this individual, whoever he may be, is the key to the success of our problem.

Your suggestions regarding division of the class and use of two monitors were employed. This seemed to improve our communication somewhat. In this manner, approximately twenty-three students viewed each of the two monitors.

The benefit of a third camera is now being enjoyed. Its presence enables the projection of X-rays, 2 x 2 slides, as well as overlay from our television studio, and in a versatile manner.

One barrier against the use of closed-circuit television in teaching is disciplining one's self toward using this medium. It requires more individual effort than classroom teaching; however, the rewards outweigh this barrier.

I believe that it will be necessary to use closed-circuit television in teaching for another year or so, in this course, before all of the technical problems are eliminated. This is expected with any new endeavor. In summary, a facility for presenting the material (television studio and auxiliary personnel), the use of a dental student for production of the art work, the availability of the laboratory for production of illustrations, funds for art materials, and the desire of faculty to better improve communications with their students, are the necessary elements to encourage use of closed-circuit television in teaching.

We have enjoyed working with your department. Your enthusiastic support has enabled us to learn more about communication. Thank you.

Sincerely yours,

R. J. Shankle, D.D.S.
Associate Professor
Department of Operative Dentistry

CC: Dean John C. Brauer
Assistant Dean W. W. Demeritt

RJS-ah